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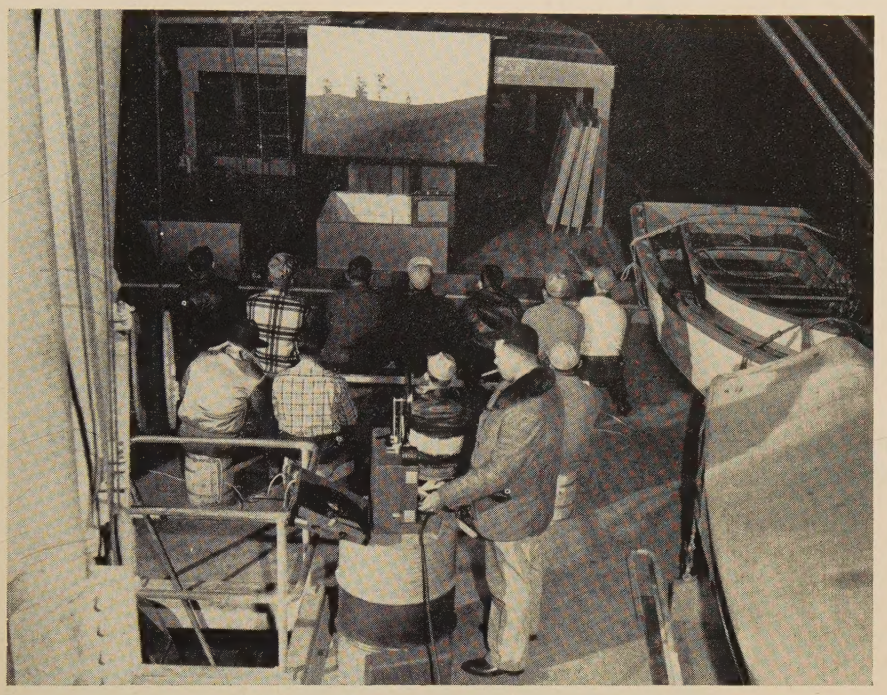
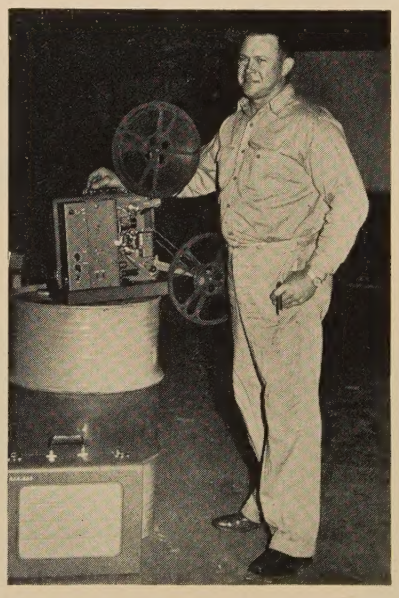
FOR THE TUNA FLEET . . . AT SEA



Aboard the SCARLET QUEEN crew members are enjoying sound movies shown by Skipper Charles Kaufmann.

The long and oft times weary rides to and from the tuna banks can now be broken by movies shown on the tuna boats. Movies such as those shown ashore in any theatre, with subjects such as musicals, comedies, cartoons, travelogues, sports, in addition to major studio features. On an exchange basis there is no limit to the number of varied films that can be made available right on the fishing banks in the same manner men now exchange magazines from boat to boat.



"The average fisherman is at sea about nine months out of 12. Sound pictures will go a long way towards keeping up the morale of these men," **says Kaufmann.**

This service is available to all fishing boats. The films are rented at a nominal fee and exchanges may be made with other boats at sea. We recommend the R.C.A. "400" sound projector for showing these films.

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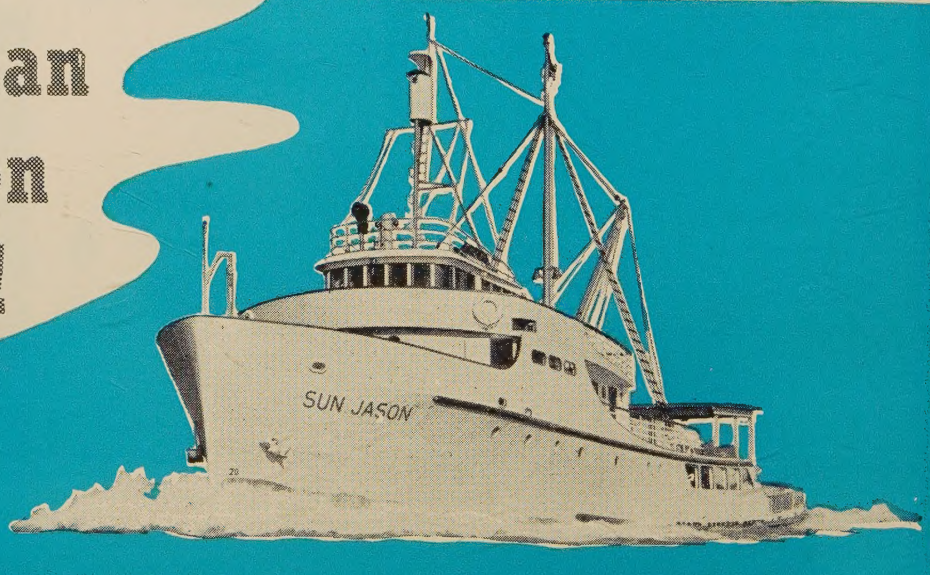

A FISHERMAN DEPENDS ON HIS BOAT!

You know the old saying about a carpenter and his tools! It may hold true for a carpenter, but with a fisherman it's different. If his boat is poorly built, or unseaworthy or faulty in some way—he won't come in with the high catches! That's why AVONDALE TUNA CLIPPERS are queens of the fleet—because a fisherman knows they'll stand up to a sea, that they'll range with the best, that everything to the last scupper is designed and built to perform with the best. And then too—AVONDALE CLIPPERS are built of STEEL!

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PAN-AMERICAN *fisherman*

NEWSmagazine of PAN-AMERICAN FISHERIES combined with the magazine TUNAfisherman

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A Marine Press Publication

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THE COVER

Point Loma, California, lighthouse. Photo by Larry Booth, Allied Craftsman.

ABOUT THIS ISSUE:

LAST October, the *Engineering News-Record*, a publication devoted to matters indicative of its name, became interested in the headlong development of Eureka, California's boat basin for its commercial fishing fleet.

"Mooring space," the journal states, "for a large fleet of fishing boats has been provided by the City of Eureka, Calif., through ingenious use of the 5x7x5-ft. Navy pontoon units that became so popular in the recent war. The city bought 774 of the surplus steel cells and at an overall cost of some $200,000, provided urgently needed mooring facilities for small craft. The site available for the improvement was a triangular area with a 1200 foot frontage on Humboldt Bay. Within this area, in which a relatively small amount of dredging was required, it was found possible to place two floating platforms each with a series of wings that provide adequate mooring space for the small craft used in the fishing industry. Before this project was carried out not only was mooring space for the 200 fishing boats grossly inadequate, but they lost time in getting underway and damage was often sustained because of the necessity for mooring them three or four deep.

"The new mooring floats," the publication went on, "are in nowise loading wharves. The boats pick up their supplies and deliver their catch at the city's wharves; the new facilities merely provide space for boats that are not in service. Shore access for personnel is maintained by ramps with sliding joints that automatically adjust to tide levels that range from –2 to +9. No anchor cables or tie lines of any sort are used; the pontoons are held in place by anchor piles spaced exactly 51½ ft. apart along the center line of the platforms. These anchor piles were driven with the aid of jets as the first step in the construction program. After each pile had been cut off at the prescribed height, assemblies, or "floats," each consisting of seven pairs of pontoons, were floated into place and fastened by bolting on the steel angle brackets that enclose anchor piles at each end of the float.

"The reasons for selecting the 51½ ft. spacing were chiefly (1) the need to provide for sufficient impact from wave action, considering size and weight of the floating structure and (2) an economical design for connections between pontoons. Piles driven on this spacing leave just enough clear space for seven pairs of the cells and their connections. Calculations based on approximations of the several forces involved indicated a 50-ft. spacing as about right. The bottom into which the piles had to be driven consists of sand overlaid with a stratum of mud. Mud thickness varies from two to six feet and since this was not considered as having any supporting value, the sand penetration was for one-third the total pile length. In no case was the penetration to be less than 12 feet. Prior to driving piles the basin was dredged to minus nine feet which at extreme low tide of minus two feet left a seven foot available depth. This was adequate for boats expected to moor in the basin. As to maximum movement of the floating structure, extreme high tide which sometimes reaches plus nine feet gives a total tidal range of 11 feet. Over this range the anchor piles were protected by four eight-foot strips of ½x2" steel from abrasion by the encircling steel collars. The collars welded to end cells of a pontoon assembly exert side pressure against these steel strips with which the piles are armoured. Pile tops were cut off 10 ft. above high water level.

There followed a complete resume of operations, which, to say the least, turned out to be an excellent and informative article, and the story, of course, excited some comment around Southern California waterfronts. *Pan-American Fisherman* magazine got a number of requests for dope on Eureka's fishing picture, so we wrote Whit Allyn of Eureka's C. of C. for some dope.

The A&P Dilemma: *Is "Bigness" a Crime?*

Fisheries groups from some of the nation's top fishing ports, like millions of other Americans, are ranged on the side of The Great Atlantic & Pacific Tea Co. in its current anti-trust litigation. The men who go down to the sea in ships are concerned specifically about what will become of the tremendous gains the nation has shown in the distribution of fresh fish in the past decade if the 90-year-old food store chain is broken up as result of the action brought by the anti-trust lawyers. Fisheries groups feel that A&P has played a major role in this country-wide distribution of fresh fish. Organizations representing agriculture, industry, labor and the consumer are disturbed by the government's apparent attempt to impose increasingly severe restrictions upon established methods of conducting business. Their opposition to the Justice Department's suit to dissolve the A&P is recorded in an ever-increasing flow of resolutions, formal letters to President Truman, national and state government officials and other stands.

The action against A&P constitutes a threat to the nation's traditional system of competition, according to many of the scores of resolutions thus far adopted in this most protested of all suits against American business. Most business organizations believe that chopping A&P into smaller, less effective units would result in higher food prices and hence a lower standard of living for the consumer. For themselves, they believe it would increase expenses, slow and snarl distribution channels and slash their incomes.

The ranks of A&P supporters also include such groups as farmers, fruit and produce growers, egg and poultry men, canners, packers, processors, distributors, suppliers, truckers, chambers of commerce, business councils, unions and housewives. Probably the largest group which thus far has expressed concern over the government's new "interpretations" of old anti-trust laws is the American Farm Bureau Federation. The voice of 1,350,000 farm families said in a resolution adopted at its national convention that though it favored enforcement of monopoly laws, it did not agree with "interpretations which apparently are being given to these laws in certain recent cases and administrative rulings."

America's foremost farm group said it "is important that distinction be made between conditions reflecting the effects of vigorous competitive actions and actual monopoly power." Bigness itself is no sin, the AFBF pointed out when it said that "size and area of activity are not necessarily indications of monopoly."

"Regulations should not be used to eliminate the possibility of integrated systems that are efficient and competitive," the resolution stated. "Such systems have the possibility of bringing about a badly-needed reduction in the margins that now exist between the producers and consumers of many items."

Two of the fisheries groups which believed dissolution of A&P would have serious consequences for the industry were the Massachusetts Fisheries Association, Inc., and the Gloucester Fisheries Association. These two groups represented opinion in the East's leading fishing ports of Boston and Gloucester. Fishermen returned to these ports in 1948 with catches totaling some 450,000,000 pounds and worth about $27,000,000, according to the U. S. Fish & Wildlife Service. Requesting President Truman and members of Congress to oppose the suit, the Massachusetts Fisheries Association, Inc., said A&P's fish department has offered the Bay State fishing industry "its greatest opportunity to expand its market during the past 10 years."

"The extensive research by A&P in processing, packaging and displaying fish products," the group wrote Mr. Truman, "has revolutionized the retail fishing industry particularly with regard to quality control, sanitation, product promotion and customer satisfaction.

"The pioneering work done by A&P has enabled the fishing industry to reach standards not considered attainable in the past and has helped bring about a stable economic situation beneficial to the entire Massachusetts fishing industry."

Fear of the "consequences that will befall the Massachusetts fishing industry" if A&P is dismembered was expressed by the Association. At stake, it said, are the interests of the men and women who "earn their livelihoods in one of the most important industries in Massachusetts." The Gloucester Fisheries Association, composed of 20 fish processing plants, requested in a resolution that Massachusetts Governor Paul A. Dever and the state's members of Congress "make every effort to have the Justice Department withdraw its suit" against A&P.

A&P, the Gloucester group said, "has promoted the sale of fish throughout the United States and . . . has been a substantial influence in increasing the income of Gloucester residents. Union support of these stands came from the Boston Sea Food Workers' Union (AFL). The union resolution "thoroughly opposed" the suit and asked Governor Dever to make every possible effort to halt the action.

On the surface it would seem that this sort of governmental action means little, at least in this territory, where A&P is so little known. Such, however, is not the case. If the federal government can institute an action of this nature, regardless of the area involved, any big American territory is in danger of similar proceedings. In other words, it appears that A&P's only "transgression" is success. This sort of thing is guaranteed by our Constitution, and, the government investigators, despite their efforts, have not been able to prove the guilt of monopoly in the case of this great chain of stores.

The GLOBE

An International News
File compiled by
FOREIGN BUREAUS
of
Marine Press Association

Tokyo, Japan.—The head of the Japanese Department of Research and Statistics, Fisheries Agency, is visiting the United States to observe the facilities and organization for fisheries research in this country, states a Weekly Summary of SCAP's Natural Resources Section. The purpose of his trip is to gain a first-hand acquaintance with the methods by which other countries are solving their fisheries problems in the belief that this knowledge will assist in the reorientation of fisheries research in Japan.

A great deal of fisheries study has been conducted by the Japanese. However, during World War II fisheries research activities were seriously curtailed because of economic conditions and destruction of equipment and property. Since the surrender many of the fisheries stations and vessels have been reactivated, assisted by annual increases in budgets. By 1948 about 250 fisheries research stations were operated by prefectural governments, 30 were maintained by universities and colleges, approximately 30 by the central government, and about 20 by private industry. These include numerous branch and field stations.

Before the war, Japanese research devoted much attention to exploitation of new fishing grounds, improved methods of locating and catching fish, and canning, smoking, and processing of fish products. The emphasis was on immediate production through expansion and exploitation of new fishing areas, especially overseas. Little attention was given to problems of conservation to sustain high levels of yield in long-established fisheries, especially in coastal waters.

As a result of the reorganization of the Japanese Fisheries Agency creating a special research department, the new program has established eight regional research stations in strategic geographical locations. Each station is to specialize in those phases of over-all fishery problems most important to its district. New emphasis is to be placed on population studies, collection and analysis of catch statistics, and migrations and life histories of fish. These investigations are to form a basis for the solution of fishery conservation and management problems.

Emphasis also has been placed on the necessity for Japan to change its prewar concept of its right to intrude on the fisheries of other nations without consideration for the interest of those nations. Japanese administration and research personnel are being encouraged to consider that fishery resources on the high seas and in coastal areas beyond territorial limits should be fished in accordance with international agreements and in harmony with sound principles of conservation and utilization.

Eventually the full development and maintenance of a program of fisheries research and management will give Japan more benefits through greater production from its local aquatic resources. This accomplishment also will encourage ready acceptance by other nations of Japan's participation in high seas fisheries.

Meanwhile, for the fourth time since the beginning of the Occupation, a two-fleet whaling expedition has left Japan to explore the Antarctic.

The annual Japanese catch in the Antarctic increased from 213 whales taken by one factory ship in the 1934-35 season to 9,948 whales taken by six factory ships during the 1940-41 season. Production of whale oil and meat increased from 2,034 metric tons to 120,125 metric tons. In addition, during 1931-40 Japanese coastal whalers caught an annual average of 1,734 whales and produced an annual average of about 25,000 metric tons of products.

Japan never became signatory to the international agreements for the regulation of whaling promulgated by International Whaling Conventions in 1937 and 1938. Their indiscriminate hunting gained them an unenviable reputation.

With the beginning of the war in the Pacific in 1941 all pelagic operations were curtailed. Coastal operations continued, but they declined and ceased with the surrender in August 1945.

Because of a critical shortage of protein foods and edible oils in Japan at the beginning of the Occupation, SCAP authorized on September 22, 1945, the resumption of Japanese fishing and whaling operations in certain designated coastal areas. The Japanese Government was notified at the time that all whaling operations would be conducted in strict conformity with International whaling regulations.

Because of the success of the first expedition, and the continuing pertinence of the reasons offered in justification of it, similar expeditions were authorized to operate in Antarctic waters during the three following seasons. The importance of these expeditions to Japan and the United States is shown by the fact that the three expeditions which operated during the 1946-47, 1947-48, and 1948-49 seasons produced approximately 137,000 metric tons of products valued at about $45,000,000. Of equal significance is the fact that production per blue whale unit rose from 37 tons in 1946-47 to 46 in 1947-48, and to 50 in 1948-49.

In the coastal whaling industry, where an average of 1,500 whales are caught and 25,000 metric tons of products are produced annually, the major whaling companies have initiated research in newer and more efficient catching equipment, such as the electric harpoon, and SCAP has encouraged the development of this industry.

The Japanese have undertaken for the first time in the history of Japanese whaling a series of scientific studies designed to furnish information which not only will contribute to the protection of whale stocks in Japanese coastal waters, but also will add to the general pool of statistical information being compiled by the International Bureau for Whaling Statistics at Sandefjord, Norway. In addition, numerous Japanese have expressed the desire that Japan be permitted to adhere formally to the International Whaling Convention now in force, and become a signatory to that Convention.

EBB 'N FLOW

IMPORT QUESTION

Already Felt?

O. R. Strackbein, executive secretary of a labor management conference called in Washington, pointed out that the administration's reciprocal low-tariff trade policies has already resulted in a striking blow to the Southern California tuna industry with unemployment suffered from increased tuna imports which have climbed to about 200,000 cases in the last year. In a further warning he pointed out that a still heavier blow will be struck the industry unless the administration keeps a promise to order a third round of tariff reduction in the fall. Representatives at the conference for the Southern California industry were Donald P. Loker, of French Sardine Company, San Pedro and the High Seas Tuna Packing Company, San Diego; W. Wade Ambrose, president of the Westgate-Sun Harbor Company, San Diego; and James Waugh president of the A.F.L. Cannery Workers' Union of the Pacific, San Pedro. According to Strackbein, a committee from the conference will be appointed to meet with government agencies in an all out investigation to determine the serious affect now placed upon the fisheries, and to analyze the potential injuries to be suffered should another tariff cut be carried through.

THE JAPANESE PROCESSES

Opinion:

Dr. Karl Robinson, an authority on Eastern affairs, pointed out in a lecture at Russ Auditorium in San Diego early this month that Japan's Natural Resources are the key to that country's recovery. His remarks were illustrated with color films taken in Japan, and he said, "In many parts of Japan, workers still dehydrate fish in the open . . . " and added that where ready communication with the outside is unavailable that country is still dominated by extremely primitive methods and lack of modern equipment.

PESOS AND FEES

Kick-back:

Recent devaluation of the Mexican peso has resulted in a 27 percent increase in fishing fees, for Southern California tuna clippers operating in those waters, being ordered by the Mexican government, according to Dr. Wilbert M. Chapman, special State Department assistant for fisheries. In addition new fisheries laws have been approved by the Mexican Chamber of Deputies and the Senate. These changes are expected to affect regulations controlling the licensing of Southern California tuna boats, Chapman said.

REDUCTION PERMITS

Education:

A long-awaited special meeting is destined to occur in February at Monterey by the State Fish and Game Commission, where the Monterey Fish Processors Association hopes to show the Commissioners just what the canning and fishing industries are doing. The sardine season closed in the north on January 1st and on February 1st in the south; so the topic of expected discussion involving increased reduction permits requested by the San Pedro canners, should it be considered favorably, will not benefit the present season. Monterey canners have not requested an increase in permits.

DEATH IN THE GALAPAGOS

Joseph E. Correia

The accident which cost of the life of 18-year-old Joseph Edward Correia, young San Diego fisherman, while diving for bait in the Galapagos Islands, is one that might not be expected to happen once in a dozen years. Correia, with his father, Manuel S. Correia, were crew members of the tuna clipper *Sea Hound* which left San Diego on December 14th. Young Correia dove into deep water to release a fouled bait net from the jagged rocks below; and, it was reported, he became enmeshed in the net. The funeral was at Goodbody's Ivy Chapel in San Diego. The boy was born in San Diego, attended Cabrillo Elementary school and St. Augustine High School. He is survived by his father, Mrs. Anna Correia, his mother, and three sisters, Cecilia Pollock, Hazel and Agnes Correia. His death occurred on December 26th.

ACCIDENT

Air Blast:

Ray Mote, 50, San Diego welder, was literally blasted from the deck of the tuna clipper *Scarlet Queen*, at the Harbor Boat and Yacht Works in San Diego, when a wedge in an air compressor condenser let loose there recently. Mote was propelled through the air and dropped some ten feet into the Bay waters in a semi-conscious condition. Wendell F. Evans and Kiyo Hirase, fellow workmen, quickly fished him out and he was treated at the Quintard Hospital for severe head cuts and bruises.

SLIPS

Overloads:

Pan-American Fisherman magazine takes this opportunity to retract a statement made in the January issue, where they allowed unrestrained exuberance to overload the *Scarlet Queen*. The vessel's skipper, Charles Kaufman, kindly pointed out the error, and we take this time to erase the red from our blushing countenance. Thanks Charlie. The load, incidentally, was approximately 540 tons.

UNION vs. MANAGEMENT

Hot Flashes:

The merger of Sun Harbor Packing Company with that of Westgate Sea Products in San Diego on January 1st ignited a hotbed of coals between two rival unions for the position of bargaining agent with the new Westgate-Sun Harbor Company. Following the merger came a statement by Lester Balinger, secretary-treasurer of the A.F.L. Cannery Workers' Union that the 750 to 800 employees of the two companies would be retained, as nearly as possible, based upon their seniority and work records; but that an estimated 200 persons might suffer the loss of employment until such time as planned work expansion would somewhat reduce that number. This statement followed Balinger's earlier announcement that his Union had been retained by the new company as sole bargaining agent. The latter announcement precipitated the flare-up that resulted in a mass meeting of the C.I.O. Cannery Worker's Union, at which a committee was formed to lead a campaign within the new company on behalf of their Union. Then, on January 12th the C.I.O. filed a petition with the National Labor Relations Board for an immediate collective bargaining election at the Westgate-Sun Harbor plant, contending they had signed up a majority of the workers. Subsequently, an informal conference at the Los Angeles offices of the N. L. R. B. between representatives of the new company; A.F.L. Cannery Workers' Union; C.I.O. Cannery Workers' Union; and A. R. Taylor, examiner for N.L.R.B.; was held. The C.I.O. maintained that the new company had signed with the A.F.L. following the merger without first consulting the workers regarding their preference for a bargaining agent. The A.F.L. presented their story that they had held separate contracts with the two companies prior to the merger; and that they now held a valid contract dating from the merger. The N.L.R.B. forthwith ruled that the contract was valid; but that an election, such as sought by the C.I.O., could be granted upon expiration of that contract. The A.F.L. contract expires on June 30th.

Contention:

Meanwhile, the new automatic pack-

(*Continued on page 16*)

Press-O-Grams

SOCIAL

Chief Eng. L. H. Van Buren and Mrs. Van Buren recently returned from a few weeks trip to Mexico.

Going by plane, they made stops at Hermosillo, Mazatlan and Guadalajara, making Mexico City their headquarters. Their first address was Hotel Reforma, later they moved to the Hotel Del Prado.

Points of interest to them, in or near Mexico City, included the National Museum, Pyramids of the Sun and the Moon, National Palace, Castle of Chapultepec, Palace of Fine Arts, Shrine of Guadalupe, Temple of Quetzalcoatl, Flower Market, and the Native Markets, according to a letter from Mrs. Van B. Christmas Eve was spent at the Club El Patio, and Christmas Day was spent at the Floating Gardens of Xochimilco. Later they attended the bull fights. Trips farther from Mexico City included a flight to Acapulco's spectacular bay, and a sojourn at the Hotel Casa Blanca, one of the most beautiful resorts in Mexico.

Returning by car for a stop over at the Hotel Santa Prisca in the picturesque mountain village of Taxco, the couple visited silver shops, churches and native markets. Then back to Mexico City, via Cuernavaca. Another flight took them to the Port of Vera Cruz, where they stayed at the Hotel Mocombo. Later, they traveled by auto to Hotel Ruiz Galindo in Fortin de las Flores, (where you stroll in the gardens among gardenias, camellias and orchids or swim in the gardenia filled pool. It's tropical paradise, for sure.)

Going by plane to Uruapan, and from there by car to the village of San Juan de las Colchas, the couple transferred to horses for the last stretch to Paricutin Volcano. This trip was made at sunset and evening hours.

From each stopping point they hired a private car, with an English speaking driver, and spent part of each day covering the territory, taking 16mm movie pictures in color. Their son, Dale, could not accompany them due to school. Mrs. Van Buren returned with several momentos of the trip in the way of hand embroidered dresses, and many pieces of lovely silver. On their return they spent a week at their Lake Wohlford home, and by that time their movie pictures had been developed. The following week was spent entertaining friends each evening, showing movies, giving more details and relating incidents of their journey, prior to Mr. Van Buren's departure on another fishing trip. . . . Mr. and Mrs. Roy Lovel recently returned from a visit with their daughter and family at Inyokern, Calif. Roy is the cook on the *Queen Mary*.

NEW VENTURE

Joe Gaspar, San Diego's well-known commercial fisherman, has broken into new fields. Joe has converted a navy landing craft into a hotshot sports fishing boat, called the *Helenjo*, and is about ready for business. In fact, the month of March will see him ready.

"Moreover," says Joe, "my boat will be the most democratic vessel you could ask for. I'm going to cater to private fishing parties of any politics, race, or creed." Good luck, Joe.

APPOINTMENTS

We hear that William Kusz, formerly supervisor of industrial advertising at Caterpillar Tractor Co., Peoria, Ill., has been named supervisor of cooperative advertising to succeed K. M. Emery who has resigned to join the Hosler Advertising, Inc., Peoria office. Kusz, so our informant says, had been in the Caterpillar accounting department prior to the war, entered the army in 1942 and returned in 1946 when he became a logging representative in the sales development division. He was appointed supervisor of industrial advertising in August 1948. Kusz was graduated from the University of Illinois in 1938.

Emery joined Caterpillar in December 1929 and served in various sales, advertising, merchandising and purchasing capacities before assignment as cooperative advertising supervisor. He was graduated from the University of California in 1926.

Named as successor to Kusz is Wendell J. Farischon, formerly News Editor of the News Service in the advertising departmen at Caterpillar. Farischon joined Caterpillar as a news writer in 1946 and was named news editor in August 1947.

The job of news editor, now designated supervisor of news writers, will be assumed by Jerry Cook, formerly news writer. He joined Caterpillar in August 1947. Cook is a University of Illinois graduate, class of 1936.

BIG JOB

Something that opened our eyes was the successful drydocking of the salvaged purse seiner *Petrina F.*, which sank in 200 feet of water off Point San Luis, California, late in December, which was completed recently at the Los Angeles Division of Todd Shipyards Corporation. Wilver & DeFever, 1225½ South Leland Street, San Pedro, were surveyors for the underwriters in the unusual operation.

The vessel, 78 feet in length, of 97 gross tons and with a beam of 22½ feet, had completed a haul and while stowing her cargo was caught in a heavy swell and capsized, sinking with approximately 80 tons of fish aboard. When raised, she was kept afloat by means of stowed 50-gallon barrels and 15-gallon drums, and was towed into Todd's yard with a portion of her stern and only three feet of the bridge and pilot house exposed above water. The draft fore and aft was 20′ and 10′, respectively, compared with her normal mean draft of 8′6″.

Preparatory to drydocking, the forward section was encircled with heavy wire rope slings and connected to the wharf gantry crane for raising the vessel to an even horizontal position. With the aid of the crane and lines from the wharf and drydock, she was then guided over the submerged drydock.

Special shoring blocks were built in the event of crushed ribbing, as the structural condition of her underwater damage was unknown. With extra lines secured to her main deck from the drydock wing walls, she was centered over the drydock keel blocks and slowly raised. Water and debris escaped through the rents in her hull for some time after the dock had lifted her clear of water, and as soon as the confined waters had subsided the battens were removed from the fish hold and engine room for the removal of the oil drums.

Cod-Men of Gloucester

(Here's a good roundup of the Gloucester County commercial fishing situation, written by Jerry Raichert of Caterpiller Tractor's far-flung News Service. This is a story, primarily of cod fishing, and it's plenty interesting.

•

COD fishermen of Gloucester County, at the extreme northeastern tip of the Province of New Brunswick, need no introduction to the fishing industry, for people of this region have a long and illustrious past in the fishing annals of the world. The story of their fishing methods and customs provides a tale as interesting as any that come out of the great fishing grounds of the North Atlantic.

Until just recently, the fishermen of Gloucester County carried on their fishing from small schooners and tiny open boats in the waters of the Gulf of St. Lawrence. Methods were slow and hardships many, since sudden storms could wreak havoc upon equipment and men. Early in 1947 the New Brunswick government, through its Fishermen's Loan Board, developed an expansive scheme to improve the lot of New Brunswick fishermen. Through generous loans and a long amortization period, the Board built for the fishermen a new type of craft which was named the *Gloucester Dragger*.

The *Gloucester Draggers* have been so named because this name is synonymous with the work carried on from two great deep-sea fishing areas, Gloucester, Massachusetts and Gloucester County, N. B. The draggers are 59 feet overall, have a 15-foot beam, 5.9-foot draft, and 37 tons gross. Frames are of oak, with planking of pine sheathed with spruce. The vessels, known as "half and half draggers," (dragging being done from one side only) were built for the New Brunswick fishermen at a cost of $26,000 each.

Using Grimsby doors and a No. 35 drag, each vessel is capable of dragging from 20 to 90 fathoms at a speed of between 3½ and 4 m.p.h. The hold, which is divided into nine bays, is capable of holding up to 60,000 pounds of fresh fish. Each vessel is out for a maximum period of four days.

Past experience has shown that the *Gloucester Dragger* has a yearly average catch of at least double that of the best schooner operating in the same area. These draggers have landed weekly catches averaging over 50,000 pounds each, with a record catch of 67,000 pounds in three days, and one of these draggers landed 109,000 pounds in one week.

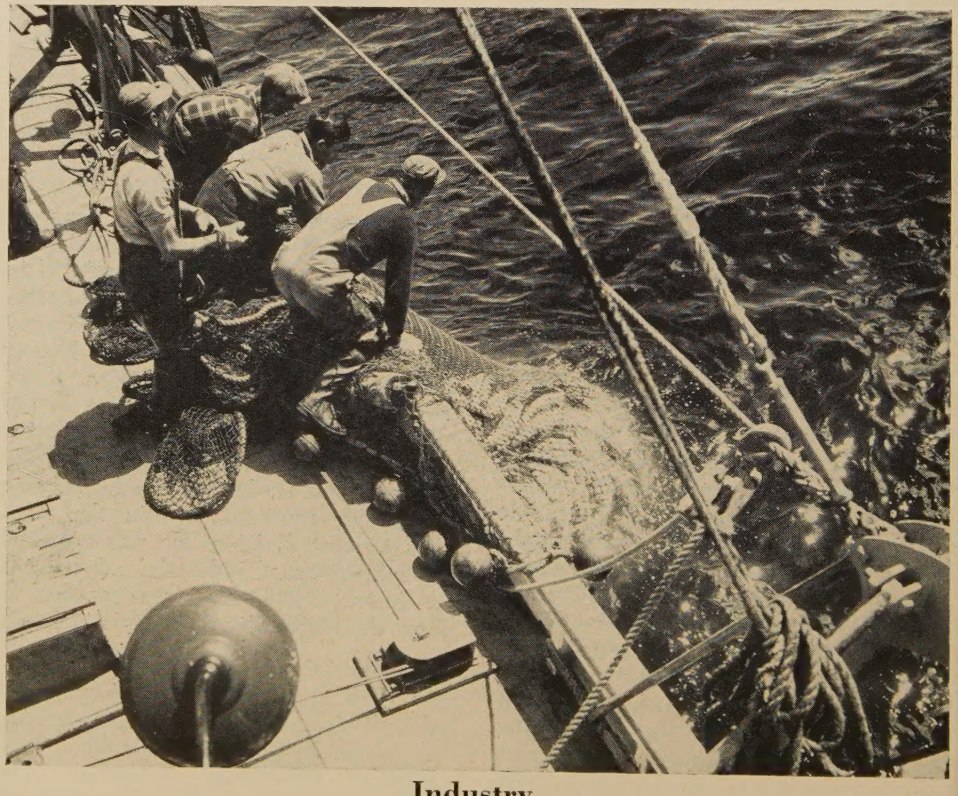
Five of these vessels were built in 1947, and they proved so successful and so popular that more were added until the fleet now numbers 20. Fourteen of them are powered by 115 h.p. "Caterpillar" Diesel D13000 Marine Engines, six by GM, turning a propeller mounted on a 3½" Tobin bronze shafting. Each vessel carries a fuel tank for 600 gallons, giving approximately 120 hours of cruising time at an average speed of ten knots.

Thirty more fishing craft of various descriptions ply their trade in and out of Chaleur Bay, or as it is known in French—Bai Des Chaleurs, making a total of about 50 fishing boats in operation. Since the draggers only operate 21 weeks of the year, between late May when the ice leaves the Gulf of St. Lawrence and mid-September, the crews exert almost superhuman efforts in their endeavors to bring back record catches of fish. The *Gloucester No. 10* for example, under the command of Captain Edgar Blanchard, made a record catch of 1,235,000 pounds of cod during the 21 weeks of its operation.

USING Grimsby type doors and a drag 75 feet in length with a 45-foot opening, the vessel is capable of dragging from 20 to 90 fathoms with 40 to 45 fathoms being the average depth fished in on the trip made by the *Gloucester No. 10*, starting July 4 from Shippigan, and returning July 7. During the dragging operations on this trip, approximately 150 fathoms of wire rope was used on each door dragging at 45 fathoms.

When unloading, the drag is hauled in, and the loose net is pulled over the side of the vessel until the full bag is reached. A hitch is then taken around the bag and by means of pulleys and the winch, the bag is hoisted on the deck. With the bag in a raised position, one of the fishermen pulls a rope unfastening a drawstring at the bottom of the bag, which opens the net and the fish spew onto the deck. The drag is then placed overboard again, while the fishermen gut and clean the fish, and stow it in the hold. In this process, two members of the crew slit the fish open

(*Continued on page 15*)



Industry

Gloucester cod-men haul aboard a big catch.

An International News Service Thought the Tuna Import Question So Important That It Gave This Story

WORLD PLAY!

(When a sprawling, world-wide news wire service such as *United Press Association*, becomes interested in a story, it's *news!* Last month, Malcolm Donnelley, Bureau Manager of *UP* in San Diego, California, dredged up the following dope, and fired it to newspapers the world over, including those in Japan. To the casual observer, perhaps, this story means little. But, in the interest of explanation to the public at large, it can have only a resounding effect. It is herewith re-printed, and this magazine is grateful to Mr. Donnelley for his permission to reproduce it.)

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SAN DIEGO. (UP)—A spokesman for San Diego's union fishermen today called for an "import quota system" to limit importation of tuna from Japan, Chile and Peru.

Unless something is done to limit imports of foreign caught tuna, the tuna fishing industry in Southern California is threatened with extinction, union spokesman Les Balinger warned.

"As long as the American industry can meet American market demands, there is no need for, nor should there be, imports of frozen Japanese tuna or tuna from Latin America," Balinger said.

"If the American fishing industry cannot meet market demands, then we should bring in enough to supply the market."

Another leader in the San Diego tuna industry, who asked his name not be used "because I'm in no position to speak officially," said:

"From what we hear out here there is more and more Japanese tuna coming into the country. We are a little worried about it but there seems to be nothing we can do. The Japanese are trying to put pressure to get more in so that they can get more U. S. dollars. We have been alarmed for some time over the situation. We have our representatives in Washington who see to it that our congressmen are fully informed as to the situation."

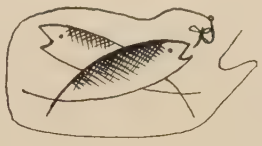
Harold Cary, manager of the American Tunaboat Association, said his organization is "making a study of the situation and if it (foreign imports) becomes a major factor and effects our industry we will have to make a move.

"The imports are increasing, but we do not know by how much. The situation in Japan is not clear."

Recently, the Van Camp Sea Food Co., of Terminal Island, California, purchased a shipment of Japanese-packed tuna which was sold under the company's label of "Chicken of the Sea." However, it was plainly marked "Product of Japan."

Montgomery Phister, vice-president of Van Camp's, said the shipment was purchased by his company in New York.

"It was only a small allotment," Phister said. "We got a chance to buy it in New York on a fixed price deal from SCAP. It was at the prevailing U. S. price, less a certain percentage.



"The quality was just fair and not at all up to the usual Van Camp standard. First, we tried to sell it unlabeled but found no takers. We then labeled it with our 'Chicken of the Sea' brand, but made it plain it came from Japan and was not our best grade.

"By the time we purchased the lot and processed it and distributed it, the cost was more than normal — even though the original price was lower than we could sell tuna for in New York.

"We have definitely no plans to buy any more Japanese-packed tuna. It was only a small shipment, anyway, as I recall—around 100,000 cases altogether," Phister explained.

Pan-American Fisherman, the San Diego fishing trade magazine, has been backing a proposed "import system" as has Congressman Clinton D. McKinnon, D., Cal.

In a series of articles, the magazine has maintained continued imports of tuna from Japan could easily wreck the local industry.

There are a number of reasons for this, the magazine claims. First, fishing is primarily Japan's greatest industry. This means that American fishermen see the Administration's bolstering of Japan's economy more or less aimed at her rehabilitation through her fishing which, in turn, throws most of the rehabilitation on the shoulders of one industry—fishing.

Second, SCAP only recently granted extension of fishing territories allocated to Japan after the war's end. This means that the Japanese now can fish nearly to Hawaii. With cheap labor, inferior costs, etc., they can throw Japanese tuna on the eastern markets at around 35 percent less than the American brand, which has high operational costs.

Third, the only way that American canneries can operate with the Japanese is to bring their costs down, and that is what has caused all the recent unrest about moving local canneries to Louisiana, Texas, Mississippi, etc. to be closer to the Eastern market.

The magazine said the recent tie-up of tuna boats, putting fishermen on the beaches for more than two months, can be traced directly to importations. In other words, South American and Japanese imports glutted the big Eastern markets, the magazine said.

The industry as a whole, seems to feel that the big danger to their businesses lies in imports of frozen and foreign caught tuna, rather than in the relatively minor amount of Japanese-packed tuna, which they say is hard to sell to the American public and is inferior to the American packed brands.

The Drake &

Concluding Installment on the Backgro
Half-Million Do

Veep
Cecil W. Drake

•

By STUART ALTON
Marine Press Staff Writer

AGAIN according to Bullen, the hot plastic antifouling paint is a hot melt formulation containing no solvents, and, at room temperature, is a hard but flexible solid material. For application, the material is melted and held at 300 degrees Fahrenheit, at which temperature it is a thin liquid. The molten paint at 300 degrees Fahrenheit is applied by spray, with specialized electrically heated spray equipment. The application is made very rapidly and paint "dries" by cooling after contacting the cold steel hull, eliminating usual drying time. Hot plastic paint is applied at the rate of approximately 2 lbs. per sq. yard and gives a film thickness of approximately 1/30 inch, or approximately ten times the thickness obtained with a normal solvent type antifouling paint. The film is very impervious to water and due to its relatively great thickness, maximum protection is afforded the hull both from the corrosion and fouling standpoint.

Another hot Drake and Bullen item, just recently acquired, is Avondale's new speedboat, the "*Safticraft.*" Designed to fill every critical requirement of those sport fishermen and cruising enthusiasts who demand in a twenty-eight-footer all the safety, quietness, comfort and elegance which might be expected in a boat sixty feet long or even of larger dimensions, the new vessel made its first public appearance at the New York Motor Boat Show last month.

Rarely has any previous attempt to place a new boat in the yachting field enjoyed the benefits of such long experience in steel boatbuilding, careful planning of design, engineering and other manufacturing details, knowledge of boatmen's problems, and adequate financing, as accompany the presentation of this product.

THE builder, for instance, the Safticraft Company, Division of Avondale Marine Ways, Inc., New Orleans, have many years knowledge in all-steel construction, gained in building boats of every description from ocean-going freighters, salvage tugs, river towboats, down to fast personnel launches. Avondale's reputation is enviable. Not contented with resting on its unequalled war record for promptness and excellence of performance—including winning of the Maritime "M"—Avondale is one of the few yards in the country which have increased wartime business in the peace years which have followed. Now, following the completion of the two largest dredges in the world, the construction off offshore tugs in half-dozen lots and the completion of scores of twin-screw Diesel-powered personnel transport boats for South American oil field and shipping interest, Avondale now turns to that swiftly-growing number of experienced boatmen who expect the safety of steel construction in their craft.

Heading Avondale is J. H. Bull, whose combined talents for all-steel engineering plus sensible business administration has brought the corporation from an initial investment of around $25,000 to a multi-million dollar firm with Dun's top rating. Heading the Safticraft division of Avondale is Jack Churchward, first engineer to produce steel pleasure craft on a production line basis and bring enjoyable boating within the reach of additional millions of boat lovers, and first to establish a dealer-distributor organization for adequate merchandising of such craft.

Steel Safticraft is 28′ in length, long enough for stability and good rough water performance; the beam is 9′9″, broad enough to carry the weight of Diesel power. Models will be available in single and twin-screw, gasoline or Diesel engines. The hull lines have speed as well as seaworthiness built into them.

Accommodations are surprisingly ample in a hull of these dimensions; comfortable sleeping quarters for four are provided in two separate staterooms, one of these formed by the quick rearrangement of a roomy dinette. There's full headroom throughout, even for tall people; there's gravity-feed running water—no more manning the galley pump! Windows are rattle-proof, screened if desired; there's carefully planned full ventilation; hull insulation guarantees coolness and quietness—the latter not always present in previous small steel craft.

The 28-footer is the only hull scheduled for production at present; however, it will be available in a variety of arrangements and accommodations. Hulls outfitted with less luxury will also be available to boat users who demand small steel boats for light towing, oil field service or other utility purposes; Avondale is not going to forget that work-boat field!

The price under $5,000 for the Deluxe Model is possible only with mass production and the lower-operating cost of year-round Southern construction. This means a lower price for a better boat, one the average American can own.

With many requests for dealer territory being received, allotments are being made rapidly; with mass production in the immediate future, adequate national advertising is planned along with other dealer sales aids.

BUT that isn't the works, so far as Drake and Bullen's expansion program is concerned, especially in the matter of distributing vessels. One of their latest is Driscoll Brothers, of San Diego's new tunaboat tender. They are fast, lightweight boats, with a ½″ laminated bottom and a 3/8″ sides with three full-length oak guard rails. The stem, keel, and clamps are laminated. Outstanding features of the boat

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PACIFIC OCEANIC FISHERY
INVESTIGATIONS

Bullen Story

a Firm That Rose From Scratch to the rk in Three Years

are: Operator's cockpit located in front of engine making engine easily accessible from large after cockpit; engine is fully protected by engine box; instrument panel is recessed forward of front cockpit to provide full protection from spray; boat carries two gas tanks, total capacity 37½ gallons; boat has exceptionally good seaworthy qualities and short turning radius; is very dry at all speeds; when power is cut the bow does not drop abruptly as in the case of most boats of this type, but settles down gradually; propeller shaft is monel; speed is 35 miles per hour with Chrysler Crown Engine producing 115 horsepower at 3,200 RPM. Engine can be furnished with direct drive or reduction gear, as desired; paint job first class throughout; non-skid decks. Some of these have been supplied to: *Sun Voyager, Sun Traveller, Mary S, Mermaid,* and *Jenita.*

Back to a personal vein, Peter F. Bullen, is the President and General Manager of the firm, and is the older of the two men, having been born in Chicago, Illinois on September 22, 1896. Prior to hitching his wagon to Drake he was with the General Tire and Rubber Company for sixteen years. He spent four years in the war and says that, "during the year and a half I spent overseas, I had plenty of time to think." He was a Lt. Colonel in the Army Repair Squadron.

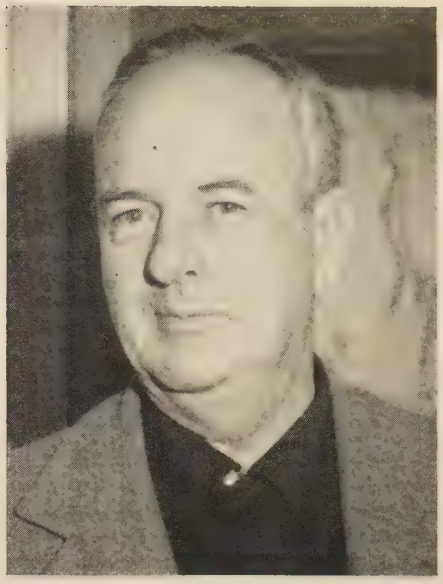
Shortly after the war he married Dorothy Drake, and now has a daughter with an A.B. degree from the University of Southern California, and an M.A. from Stanford. Regarding the future of the fishing industry Bullen says "the canners have a sales problem. However, the rest of the industry is well able to take care of itself."

Cecil W. Drake, on the other hand, was born in Pomona, California on an autumn day in October, 1902; to be exact the 12th. He married his former secretary, Marion, and has five children. They are William, who now is eighteen and attends City College, Margaret, age 14, Dana, age three, and the new twins, Victoria and Celia who are just one year old.

Drake started his business career at the age of sixteen, with the Fairbanks Morse Company, and proceeded to put in nineteen solid years of work, taking advantage, along the way, of a student's course in engineering products at Fairbanks Morse, and after transferring to the Los Angeles branch, finally achieving the position of Sales and Marine Engine Manager in the Los Angeles office.

He arrived in San Diego in 1926, looked the town over and decided that it was the spot for him. He jumped in and sold Lawrence Oliver and Charley Landers, who then had the Chesapeake Fish Company, a 60 H.P. diesel for the boat *Chesapeake.*

Since then he has been one of the key men in the designing of more than thirty tuna clippers, six of which were built at the United Concrete Pipe Corporation in Long Beach, and five in Westwego, Louisiana at Avondale Marine Ways, Inc. He is, incidentally, the official West Coast representative for Avondale.



President
Peter F. Bullen

One of Drake and Bullen's ideas was to break the tuna pole market by refusing to sell any unless they could sell them for less than $5.00 per copy. Then, in the middle months of 1947, they were able to get top flight poles at $1.50, which were previously sold at between seven and eight dollars. This business procedure and the belief that one should "always try, when stuff is hard to get, to push merchandise right up to the minute and out in front," has, in the last twelve months, made a pretty penny for Drake and Bullen.

Product
Driscoll Brothers, San Diego, California, is manufacturer of this glittering little vessel.

EUREKA, CALIFORNIA

the Little City's Commercial Fishing Industry Is Booming

(How many men and women are employed in Eureka's rapidly-expanding commercial fishing industry? How many fishing boats operate from Humboldt Bay? What purchases are made in that territory? To obtain these answers, *Pan-American Fisherman* asked Whit Allyn, Secretary-Manager of Eureka Chamber of Commerce, to do a bit of reporting. Here's his answer, and thanks to him.)

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I LEARNED that there are 220 boats registered at Eureka and paying taxes here. These boats fish close to Humboldt waters most of the time. In addition, there are approximately 400 other boats operating from here on an average of six weeks to two months of the year. To estimate the number of men on board the 400 boats here seasonally, it was suggested that we use the average figure of two men per boat. I was told that 80% come from the north — many from Seattle, Grays Harbor and Newport. Balance of 20% come from southern waters such as San Pedro and San Diego. Many follow the tuna run. On the 220 boats registered here, there are about 418 men, as follows: Seven dragboats have five men; 20 have four men; eight have three men. Of the balance of 186 boats, about one-half or 93 would have two men on board and the balance of 93 would be one man boats. This would total 418 men.

The number of men and women employed in the fish plants at Eureka and on Humboldt Bay ranges from a high of 350 to a low of 80. The average for the year would be about 150, a survey of all the plants disclosed. The Weissich Fish Company and the Tom Lazio Fish Company together employ roughly one-half of all the men and women in the fishing plants on Humboldt Bay.

I first called on Lester M. Holland, Collector of Customs, Post Office Building, Eureka, to find out the number of boats registered here. He informed me that he registers only boats of five tons net or over. These are documented boats having names. There are 135 of these boats on his books. Boats under five net tons are numbered boats and are registered by the U. S. Coast Guard in San Francisco. Mr. Holland said that during the war all fishing boats were registered in Eureka, but since the close of the war, the numbered boats are registered in San Francisco, while documented boats having names are registered here. Mr. Holland said that many of the boat owners who live in Eureka have boats registered elsewhere due to lower taxes in other ports. He thinks that when a boat owner lives in Eureka and his children go to school here and he enjoys police and fire protection, that he should register and pay taxes here. He also called attention to the fact that considerable time is saved the boat owners by virtue of having an office here rather than having to be documented in San Francisco.

I then talked with James J. McCloskey, Deputy County Assessor. Mr. McCloskey reported that there are 142 numbered boats here according to his records and 84 documented boats, or a total of 226. Of this number, he said that about six would be pleasure craft —all others commercial fishing vessels. He reported that Seattle has an unusually light tax and for that reason, boats prefer to be registered from that port when possible.

From Irwing Daniels, Wharfinger at Eureka's new $200,000 boat basin and from Norm Underwood who was Wharfinger until a year ago, I learned that 140 boats pay wharfage fees at Eureka's boat basin and that far more would be berthed there if space was available. Attention was called to the fact that commercial fishing boats are tied up all over Humboldt Bay including the entire length of the Eureka waterfront. Mr. Daniels reported that during September and October, 600 fishing boats were tied up on Humboldt Bay due to a combination of storm conditions and the tuna run.

AS to purchases made by owners of fishing boats, Noel Franklin of the Boatowners Association reported that gear would be first in importance. The nets are expensive. They are purchased mostly in Seattle and San Francisco. Twine to repair the nets is purchased here in Eureka, as is manila rope. Wire rope is important in trawling. A large fishing vessel has more than a mile of cable on board. Gear would include steel galvanized pulleys of all sizes. Radio repairs, a headache to the fishermen, are important. The vessels' compass needs adjusting regularly and this is done largely in Coos Bay and in San Francisco, I was told. Groceries and fuel are purchased here. Engines, most of which are diesels, cost from $1000

(*Continued on page 19*)

Busy Port
Aerial view of Humboldt Bay, Eureka, California.

TUNA

Its Spawning and Development

(The following, written by Milner B. Schaefer, South Pacific Investigations, United States Fish and Wildlife Service, Stanford University, Palo Alto, California, is a goldmine of information on the spawning of Pacific tuna and its influence on fisheries. This magazine thanks Mr. Schaefer for his permission to reprint it.)

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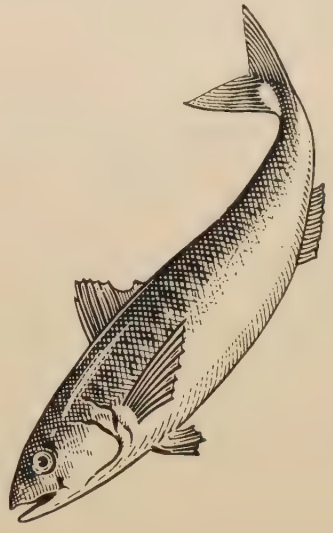
THE spawning and the early development of the Pacific tunas, like much else in the biology of these large, valuable oceanic fishes, are subjects about which our information is notably fragmentary. Somewhat more data are available regarding the same or closely related species in the Mediterranean Sea and Atlantic Ocean. Even in the Mediterranean, however, where these fishes have been the objects of a commercial fishery since antiquity, much remains to be learned.

During the spring of 1947 the author and a colleague in the Fish and Wildlife Service had an opportunity to study the tunas and tuna fisheries in the Pacific Ocean off Costa Rica and Panama. Fortunately, our period of observation from late January to May coincided, at least partly, with the spawning seasons of several species of scombroids, including the commercially important yellowfin tuna (*Neothunnus macropterus* Schlegel) and the oceanic skipjack, or striped tuna (*Katsuwonus pelamis* Linne). Among the commercial catches, ripening yellowfin tuna were found to predominate in late January to mid-May, although no running-ripe females were observed. All yellowfin tuna specimens of size which mature sexually from catches made in late June (examined when landed in July at Astoria, Oregon) were found to be spawned out. Oceanic skipjack in advanced stages of sexual maturity were prevalent in the catches in February. Spent skipjack were taken in late March.

Twenty-nine juvenile specimens of yellowfin tuna, from a centimeter to about 4½ centimeters in length, were taken in the oceanic waters off Costa Rica and upper Panama, up to about 50 miles offshort, between late January and mid-May, by dip-netting at night under flood lights. Two small, early juvenile skipjack were taken by the same means in the same area, one on January 28 and one on March 20. Juveniles of these two species have been described in a recent paper (Schaefer and Marr, 1948), which also deals with the observations on conditions of gonads of specimens from the commercial catches.

The capture of two sexually maturing black skipjack (*Euthynnus lineatus* Kishinouye) in late February, and of one running-ripe female of this species in April, indicates that these fish, which are not used by the American fishery at present, also spawn in this region in the spring. A series of 19 juvenile specimens of the black skipjack, 29 to 86 millimeters in length, was taken in March by dip-netting under flood lights at night in the same offshore waters where the juvenile yellowfin tuna and oceanic skipjack were captured.



ALTHOUGH this is the only definitely located spawning area in the Pacific Ocean for any of the Pacific tunas, it is quite certain from notes in the literature that others also exist. Lutken (1880) has described early juvenile tunas, which were perhaps yellowfin, taken at three Atlantic stations and at one station in the South China Sea, all of which were well offshore. Kishinouye (1923) recorded the occurrence of oceanic skipjack 21 centimeters long near Okinawa. He also recorded a 13-centimeter juvenile *Euthynnus yaito* (Kishinouye) from near Formosa and another of the same size from an unidentified locality in the Dutch East Indies. Brock (1943) stated that albacore (*Thunnus germo* Lacep.) with ripening eggs are captured in the Hawaiian commercial fishery. Chapman (1946) caught oceanic skipjack 8 to 10 inches long by trolling near Guadalcanal. The title of a Japanese paper (Matsui, 1942) which I have not yet been able to examine, indicates that tuna spawn near Palau; Prof. Hiyama of Tokyo University has written that this conclusion was based on a comparison of the weights of gonads of fishes from Palau with those of specimens from Japanese waters. Data, which have not yet been published, gathered in the Marshall Islands by one of my colleagues in connection with the Bikini surveys, indicate that yellowfin tuna and oceanic skipjack spawn near there in the summer months. Two juvenile *Euthynnus*, presumably *yaito*, 83 and 92 millimeters in length, taken by Dr. A. W. Herre in Lembeh Strait, Celebes, in June 1929, are in the collection of the Stanford Natural History Museum. Other specimens, collected by Herre from Molluca, labelled as *Euthynnus affinis* and *Katsuwonus pelamys*, are actually juveniles of the genus *Auxis*. These specimens were examined through the courtesy of Dr. G. S. Myers of the museum. On the basis of all the foregoing evidence, we are certainly safe in concluding that the Pacific tunas spawn in oceanic waters in many places, the discovery of which only awaits an intensive search.

The eggs, larvae, and juvenile stages of the tunas are, like the adults, completely pelagic. Although ripe eggs of none are known from the Pacific, with the single exception of those from the one black skipjack from off Costa Rica mentioned above, the pelagic eggs and larvae of various species have been taken in the Mediterranean Sea, and have been described in several publications (Sella, 1924, 1929; Sanzo, 1925, 1929, 1932). Early juveniles have been captured in the Mediterranean Sea and in the Atlantic Ocean very far from shore. Some of these have already been mentioned. Ehrenbaum (1924) has studied the tuna juveniles taken in stramin nets and young fish trawls by the *Thor* and other vessels of the Danish Oceanographical Expeditions. When one plots the locations of the stations at which this material was captured, as I have done, it is seen that a good deal of it was from stations hundreds of

(*Continued on page 20*)

Pacific Mackerel
Tagging Experiments

CONCLUSION

(Here is the final installment in the Mackerel Tagging Experiment series, printed in this magazine, courtesy of Donald H. Fry, Jr., and Phil Roedel, California Division of Fish and Game. The previous article ended, "One fish was recaptured in Santa Monica Bay, 21 miles from the point of release off Long Beach, only 20 hours after it was tagged.")

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These returns provide scanty information as to the movement of given groups of fish. Because of the lack of opportunity for recovery north of Santa Monica Bay and south of San Diego, all recoveries from lots marked in those areas perforce showed movement in only one direction. Some of the lots marked in the Long Beach-Newport area and at Santa Catalina Island seemed to spread both north and south of the place of release; returns from other lots indicated movement in only one direction. Spot returns were, however, far too few to demonstrate anything other than the fact that fish released at one locality in Southern California were likely to be retaken at any other locality within the next year.

Returns within twenty miles of the point of release are contrasted with the more distant recaptures. The data indicate that most of the fish tended to remain for several weeks close to the point of release, though a few individuals moved some little distance almost at once. While nearby returns fell off rapidly after the third week, they exceeded distant recoveries until after the twentieth. The few recaptures in the first week reflect an apparent disinclination of the fish to take a hook in the days immediately following tagging.

In two instances the number of recaptures near the point of release was markedly increased by fishermen who were definitely fishing for tagged mackerel. A commercial fisherman operating a small net boat worked a limited area off Long Beach for several weeks simply because he knew that tagged mackerel had just been released in the vicinity. The reward then offered for the return of marked fish made it worth his time to examine his catch for tags and to continue fishing in the area, although fishing for untagged fish was equally good at several other places. On several days he found a dozen or more tags. He also discovered many fish which had obviously recently lost a tag and others on which the tag had nearly worked free. This provided the first clue as to the imperfections in the opercular tags. In all, this man and his small crew seined 135 fish with tags in place out of 551 marked in the area. The second example involved sport fishermen at Malibu Beach who found that they could often earn their expenses by fishing specifically for tagged mackerel.

IN an effort to determine whether and to what degree a differential size movement took place, all magnet returns were separated into two groups. The first included tags recovered from fish under thirty centimeters in length at the time of marking; the second, those from fish thirty centimeters or more. The point of division into the "small" and "large" categories was chosen rather arbitrarily for convenience in handling the data; it does in most cases separate the various lots into roughly equal size groups.

Some evidence of a differential southerly movement is found in Southern California returns from fish released in Monterey Bay in the fall months of 1937, 1939, and 1941. The larger sizes tended to appear first, always predominating in the season of release, while maximum returns from small fish occurred in seasons one or two. Central California returns from Southern California tag lots show no evidence of a differential movement. The lots released since June, 1940, consisted of 32,696 fish and produced 80 Central California recoveries. Of these, 15,683 were "small" when marked and 16,907 "large." (Those remaining were not measured.) In season one, tags from 29 small and 27 large fish were recovered in Central California. Total returns included tags from 42 small and 38 large fish. Recoveries from small fish released in the 1940-41 and 1941-42 seasons were considerably heavier than those from large but the reverse was true of fish tagged in the 1942-43 season.

No significance can be attached to returns by size from fish released in northern Lower California. The San Quintin lot included very few small fish. The Soledad lot consisted of only 295 small and 172 large individuals. Returns were nearly equal each season from both groups; total weighted returns of Soledad fish are 19.1 for small and 19.9 for large fish.

Returns from the very small fish (which formed in effect a third size group) marked at Blanca Bay were appreciably greater than returns from the larger sizes. This suggests a heavier influx on the part of these juveniles, though nothing beyond the inference can be drawn on the basis of a single tag lot. Returns from other small fish released in Sebastian Viscaino Bay exceeded those from large by a perhaps significant amount. Returns from both size groups released in Thurloe and San Roque Bays were of the same magnitude.

SOME measure of the relative importance to the Southern California fishery of the several regions in which fish were tagged was obtained from a study of tag returns over several seasons.

One comparison was made by deducting season zero returns from the number tagged in each region and then expressing total recoveries in the following seasons as a percentage of the number remaining. The adjustment was first made for season zero returns in order that the long-term recovery rates could be put on a relatively equal basis for all regions. The fish marked in Southern California were exposed to initial seasons of varying lengths and to fisheries of varying intensities. Those released in Central California were subject to some fishing but almost none of those tagged in Mexican waters reached the fishing grounds until season one. This method gives a minimum estimate of the proportion of survivors recaptured for it takes no account of deaths due either to natural causes or to the tagging operation. Returns in seasons 1-3 only were used because there are no correction factors for fourth season (1946-47) returns from Southern California lots released in 1941-42. The two northern Lower California lots at Soledad Bay and San Quintin were treated separately despite the small number of fish tagged at Soledad because the recovery rates were quite different. The results are reasonably consistent except for Southern California releases in 1941-42. Apart from this, returns tend-

(*Continued on page 24*)

Codmen

(*Continued from page 8*)

and the other two members remove the liver, which is used for the manufacture of cod liver oil. The rest of the fish entrails are thrown overboard. The gutted fish are then placed in the hold.

Almost 100 percent of the fish caught in the bag are cod, and a good catch or bag full is about 500 fish. The fish average about five pounds apiece, although one was caught and photographed, weighing in the vicinity of 75 pounds. At one time, a full net of fish was brought up containing approximately 1600 fish weighing over four tons. This terrific weight caused the boat to list heavily, breaking a block and parting a new 1-inch diameter manila rope. Eventually the net had to be cut and a large portion of the catch had to be released back into the sea before the net could be hauled aboard.

After returning to Shippigan, the fish were unloaded, where they were further cleaned, 45 percent of which went to frozen cod fillets, and the remaining 55 percent to salt fish which is made into boneless fish. Most of the fish landed at Shippigan were purchased by Gorton-Pew (New Brunswick) Ltd. to be made into fillets, boneless or dried.

The previous year, the 12 draggers which were then in operation landed about 10,000,000 lbs. of codfish which amounted to about 45 percent of the total cod catch for the entire province. Seven of these Gloucester craft operated for Gorton-Pew Ltd. last year and their catch averaged 850,000 pounds apiece.

No story of the Gloucester County fishing fleet would be complete without mention of that colorful ritual known as "The Blessing of the Fleet," which has taken place annually in this northern harbor for 150 years. Having its origin in the blessing Christ gave the fishermen of Galilee, the ceremony was introduced into this region by the first missionaries who came here early in the nineteenth century, and has been carried out every year since. In 1949 the fleet was blessed at the little village of Lameque on Shippigan Island at the mouth of Chaleur Bay. Approximately 50 vessels of all descriptions, including 19 *Gloucester Draggers*, congregated first at Shippigan, where they then proceeded in single file to the small wharf-encircled harbor at Lameque. Over 4,000 persons greeted the fleet as the boats one-by-one entered the harbor. Premier J. B. McNair of New Brunswick, attending the event for the first time, congratulated the fishermen on their achievements of the past year and complimented those who were respons-

(*Continued on page 17*)

Terminal Tidings

By JERRY LEE PECHT

I HEAR that a cheaper, faster smoke curing of fish is made possible by a new process placed in operation recently at the Seattle plant of San Juan Fish and Packing company. Developed by the state fisheries department technology division, the method reduces smoking time up to 88 per cent; cuts space requirements; produces a cleaner fish, and saves up to 5 per cent in shrinkage. In a test run of the San Juan smokehouse, fresh white king salmon was kippered in 6 hours instead of the normal 48. Tests on hard smoking of salt cured dog and silver salmon, now underway, are expected to take only 7 days instead of 21. All guesswork is removed by a system of automatic temperature, humidity, air volume and smoke controls. Smoke from alderwood fires outside the kiln is re-circulated, adding lowered fuel cost to the substantial savings which the fish industry will reap from the air conditioning process.

The San Juan smokehouse comprises four steel and plaster units each capable of accommodating 2,500 pounds of fish and is the largest of its type in the state. It replaces a three-story brick kiln five times its size. The equipment tests are in charge of Lynn McRae, plant superintendent, and Robert K. Pedersen, fisheries department technologist, who perfected the process.

•

From one end of the country to the other, *Where's Elmer?* is going to be replaced with: *Meet Dollyrol* —especially among the outboard motorists, dealers, distributors and jobbers of outdoor motor and sporting goods supplies. Meeting—and getting to know *Dollyrol* will be well worth while—for here is a new outboard motor carrier and dry-dock stand. It incorporates many new and interesting features, and fills a long-time need for a simplified, yet sturdy combination carrier and rack. When not in use, the unit can be dissassembled in a matter of second, by a few turns of the thumb screws, and be carried easily by sportsman or member of the family. Folds so compactly that it fits in trunk or back of car. Can be set up again just as easily and quickly. Built of heavy-gauge steel tubing, welded for greater structural strength, and enameled a high-gloss bright red for greater attractiveness. The cross-bar upon which the motor rests is hardwood, kiln-treated 2x4" and can accommodate a motor of any size. A beautiful Dollyrol decal trim is on the cross-piece and both are coated with weatherproof varnish. With the contrivance, the family won't have to wait for Dad to come out on the week-ends, because the motor will be so easy to roll back and forth to the boat. Takes to rolling uphill with the greatest of ease — and sand, mud, and grass are nothing in the life of the gadget. The motorcycle-type handle grips make for greater comfort and control, the standards are well balanced and readily adjustable by a flip of the foot on the specially-designed pedals. The single wheel is 8x2", metal, and has a puncture-proof semi-pneumatic molded rubber tire. Very easy to roll.

WHILE the Dollyrol was designed primarily for the use of the outboard-motor owner, it is admirably suited for use by the dealer as a display stand for any type motor. Better make it a point to get to meet Dollyrol at shows and in the trade publications, for at $9.95 the industry and the public are going to be interested in this slick-as-a-whistle new combination carrier and rack.

•

In view of the great number of useful and interesting gadgets that appear almost daily on the market, it might be a good thing for *Pan-American* magazine to bring out a complete book of the better-known pieces of machinery. There is hardly a day goes by that an Eastern (or Western manufacturer, for that matter), doesn't write us about its newest product. Some of these are really intriguing, and bear a more thorough treatment than we are able to give them in this column.

EBB'N FLOW

(*Continued from page 6*)

ing machines installed last year by Sun Harbor Packing Company, continue to form a major bone of contention between the A.F.L. Cannery Workers' Union and the new Westgate-Sun Harbor Company, with the Union maintaining that the machines have displaced large numbers of hand packers. The Union is demanding generally, also, that those workers with the highest seniority be given the jobs of operating the machines; while the Company maintains that it considers the ablest workers merit the job. The Union is awaiting a statement from the company clarifying contract provisions regarding worker assignments to the machines.

BUSINESS VS. ORDINANCE

Wrestling Match:

And in Pacific Grove the City Planning Commission and the Hovden Fish Products Association are still gripped in the throes of weighty matters pertaining to violation of City Ordinances as claimed by the City against the Company. It is the contention of John Milton Thompson, attorney for Hovden and T. A. Work, that the City promised the Company a hearing last year for consideration of a change in zoning, and that the City meanwhile passed a new ordinance blocking consideration of their application. On the other hand, the City burst forth with the accusation that the Hovden Company acted in direct violation of rules when they installed cooking ovens in lieu of authorized tanks and refrigeration equipment. Thus Hovden violated a zoning ordinance by operating a boning plant instead of a packing and freezing plant within the City limits. All these things came to light and festered when Hovden made application last year for permission to construct a larger building and enlarge their facilities, and the City made an inspection of the premises. The technicality appears to hinge upon just what constitutes canning operations as defined in the ordinance. And if accusations can be used as a barometer of tempers, the chief participants in this contest are hotter than a two-bit pistol.

WAGES

Contracts:

Expiration of Union contracts in December which called for a journeyman's scale of $1.85 per hour resulted in proposals by the San Diego Employers Association, representing the shipyards, and Machinists Lodge 398, independent, Electricians Local B-569, Boatbuilders Local 1300, and Painters Local 333, all A.F.L., for a reduction in the scale of ten cents to $1.75 per hour which the Association claimed would bring San Diego into line with San Pedro. Other matters taken under consideration were one week's paid vacation after one year's service. No provisions for holidays were included in the contract which expired on December 1st. Following a series of conferences over a period of some three months, during which time it was feared the unions would strike for a 15-cent an hour raise demand—later dropped to 5 cents per hour—a pay scale of $1.85 per hour was established with one week's paid vacation after one year of service, but will receive no paid holidays.

TOUGH

Dunkings:

Proof that fishermen are hardy characters seems well demonstrated by the report that Walter Zuilowski, of Detroit, plopped through thin ice into some 5 feet of icy water while fishing on Lake St. Clair recently; then waded to shore, a distance of 300 yards still clutching his precious pail of fish.

LOSS

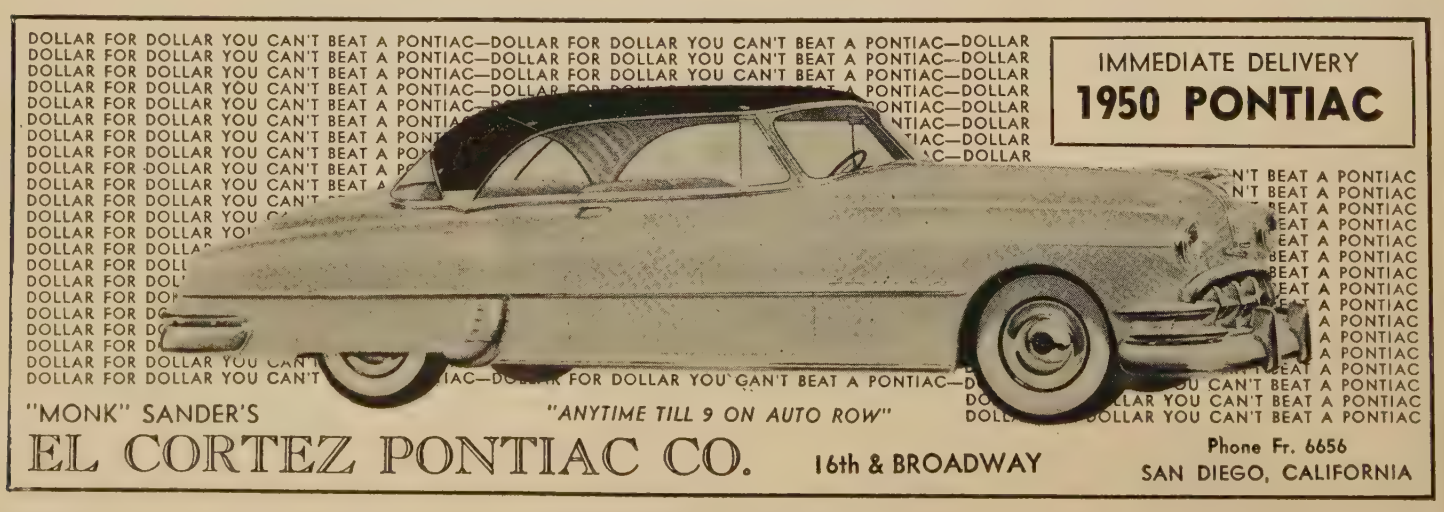
Jimmy Boy:

The San Diego based tuna clipper, *Jimmy Boy*, made headlines last month by quietly slipping beneath the surface in two miles of water off the Roca Partida. All members of the crew were taken aboard the tunaboats *Sea Wolf*, *Julia B*, and the *Atlantic*, all of which were fishing in the vicinity. Captain Robert J. King, skipper, reported they had fished all morning, when someone smelled smoke and rushed below to discover 15 feet of water in the hold. Efforts to pump the bilge were unavailing when the power and bilge pumps failed. The boat sank in about two hours. The *Jimmy Boy*, built in 1946, experienced failure of a bilge pump at an outfitting dock in San Diego during 1947 and sank in 15 feet of water. The boat fished for High Seas Tuna Packing Company in San Diego, and was insured. Co-owners were listed as the skipper, Charles E. Whitehurst, engineer, A. L. Brosio, and the National Tuna Clippers. Meanwhile, the $325,000 all-steel, *Dominator* turned turtle and sank in 40 fathoms one mile from shore in the Galapagos Islands. All members of the 13-man crew, headed by Captain Michael Cuscita left the boat in skiffs and were picked up by the *Queen Victoria*.

ASIATIC

Korea-Japan:

Coupled with these major Southern California losses came news that the Japanese had troubles. The Marine Safety Board blamed storms for some 40 percent of the Japan's losses totaling 5410 vessels, mostly fishing craft; careless navigation as accountable for 25 percent; faulty design and age for 15 percent; with the remainder of a miscellaneous nature. Not all of Japan's troubles were directly attributable to their own oversight, however. Patrol vessels of an unidentified nationality reportedly fired upon and captured three 500-ton trawlers in the Yellow Sea between Korea and China.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Codmen

(*Continued from page 15*)

ible for the decorations and planning that went into the memorable occasion.

The Honorable J. Andree Doucete, Minister of Reconstruction and President of the Fishermen's Loan Board, spoke briefly to the audience in French. He, too, congratulated the fishermen on their past performance, and spoke of the great contribution that the fleet in Northern New Brunswick was giving to the provincial treasury. He made note of the great strides made in fishing methods, and spoke of the many fine vessels in the harbor.

At the closing of the event, the audience loudly cheered, waving flags and sounding horns, whistles, and sirens.

And, so, as one person so aptly put it, "The advance of time has brought a new phase of life on the sea, and as reluctant as we are to depart with the picturesque sailing ship which has become a Maritime tradition, immortalized on Canadian currency, Maritime fishermen are laying aside thoughts of those bygone days with their past glories, and are advancing toward new horizons with new vessels to meet the growing challenge of competition."

FINE, modern, powerful vessels, such as the Gloucester Draggers, depict this determination inherent in progressive Maritimers, to maintain the position established over a century ago, of leadership in the fields of shipbuilding and commercial fishing.

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Milady

By DOROTHY HARVEY

LOOK magazine, whose phenomenal growth during the past ten years or so can be due only to the fact that the publication has a group of the sharpest editors in the business, has come up with an excellent project; one that certainly will benefit the overall commercial fishing picture in the nation. The venture has to do with a poll taken with an eye toward determining what America likes to eat best, and, as you may have guessed, seafood, with lobster, shrimp and oysters, ranked among the first ten dishes. The results of the probe, taken from a cross-section of America, which included President Truman and state governors, businessmen, workers, educators, gourmets, housewives, teenagers and small children old enough to express an opinion, are highlighted in the February 14 issue of *Look*, (on sale, of course, right now).

Esther Burke of the magazine's staff writes me, moreover, that *Look* plans a nationwide merchandising program in connection with "What America Likes To Eat," as part of a six-weeks related food promotion its "The Key To Good Eating" series, and super markets across the country will have displays in windows, on recipe racks, on counters, on gondolas, and elsewhere in the stores. These items will be pictorially represented, according to their popularity, and the sales pitch goes something like this:

"ARE you hungry right now? When you yearn for a favorite dish — what is it?" *Look*, searching for a definition of good eating, put this question to an informal cross section of 1,000 Americans, ranging from the President and 48 state governors through business men, workers, educators, gourmets, housewives, teenagers, boys and girls. Their answers gave top rating to the dishes shown on these pages. Favorites cut through regional boundaries and differences in social backgrounds. Steak was first choice of industrialists and workers alike. For many people roast beef ranked next; for others, fried chicken. Meat in some form was far ahead of any other food on the list. First reply to arrive at *Look* voted for mashed potatoes (and they ranked high on the final list). Other top choices were: spaghetti and meat balls; ham or bacon and eggs; French fried potatoes; mushrooms; sea food (lobster, shrimp, oysters headed the list); milk and cookies; apple pie (first choice, a la mode, next, with cheese); bread or rolls and butter; corn on the cob. Regional favorites that came up again and again were the Southwest's chili con carne and New England's baked beans. Runners up included: other beef cuts, lamb, pork, Chinese foods, spareribs, tossed salad, turkey, lemon pie, meat loaf, hamburgers, onions, cereals, chowder. Individual choices ranged from sauerkraut through pompano to meringues. *Look* tabulated the score, asked a top food artist, Louis Diat, New York Ritz-Carlton chef (author of *Cooking a la Ritz* and *French Cooking for Americans*), to prepare them for the photographs. The result: America's pin-up foods.

•

MRS. Phil Bertram, wife of Van Camp's Fleet Manager, has an answer, apparently, for everything. Recently, her husband who, in company with Hap Holliday, handles the *Voice of the Fisherman* radio program, got an idea, in conjunction with Hap, to put a little story on their program occasionally. While talking over the advisability with Phil, she got the idea for a subject. The title, she told Phil, would be *Malarkey*, which, as everyone who heard the broadcast Sunday, January 22, will remember. At one point of the story, the stowaway girl tells the skipper of the *Independable* that "I had to get away." Later, a friend asked Mrs. B. just why the girl "had to get away." Nothing daunted, Mrs. Bertram replied: "How should I know? Its *Malarkey* all the way through, including the reason why she wanted to get away."

Well, that's about all I can think of for now. See you next month.

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Eureka

(*Continued from page 12*)

to $16,000. Average cost of a dragboat engine is $10,000. Valuation of a fishing boat runs from $25,000 to $60,000. Insurance is a big item as it runs from 5% to 9% of the value of the boat. Painting and proper maintenance of the fishing boats is important. They should be scraped free of barnacles twice a year, although some of the boat owners do this but once a year, I was told. Granville Gillette at Fairhaven is doing a good business in the repair of fishing boats. Repair work is also done by South Bay Marine Ways Company at Fields Landing. Liquor, of course, is a big item when listing the purchases of fishermen.

Every commercial fisherman must obtain a license before going to sea. Market Fishermen's Licenses, as they are called, are obtained here at the H. H. Buhne Company. So far this season, 850 such licenses, good to March 31, 1950, have been issued. They are issued under the supervision of the State Division of Fish and Game. Fishermen from Washington and Oregon must obtain a license before fishing California waters. Cost of the annual license is $10.00.

Theo Weissich informed me that fishing has developed into a year round business on Humboldt Bay. For example, boats come from the north to fish for salmon in the spring during May, June and part of July. They fish for albacore usually in September and October. From late October until February the fishermen try for shark. Crab season began November 15 of this year and will end on July 31 next year. July to October, inclusive, are big months in the fishing business. All this makes for a year round operation rather than a seasonal business.

An interesting development is the "deep drag" made by the Bureau of Marine Fisheries vessel "N. B. Scofield" off the Humboldt Coast on October 30-31. The purpose was to find new fishing grounds and a new and greater supply of bottom fish. The experimental drag at a depth of 6,000 feet is reported to be the deepest ever made by Americans off the U. S. Coast. Results will be reported later.

Newly elected Directors may not know that since September 1947, the Chamber of Commerce has been working with the Fish and Wildlife Service, a Federal Agency, by telephoning the fishing companies each weekday, obtaining their catch for the previous day and wiring the information to San Pedro, where similar information is collected from other California ports. The information then goes out daily in report form to all commercial fishing companies on the coast requesting the service. The Chamber of Commerce is glad to cooperate in this manner because it puts Eureka "on the map" with other important fishing ports. Esther Allyn, my wife, makes these calls each morning from our home. Radio Station KIEM obtains this information from her each weekday for broadcast.

Eureka is one of five coastal-harbor radio telephone transmitting and receiving stations on the Pacific Coast. As a result of this service, provided by the Pacific Telephone and Telegraph Company, ships at sea may talk by radiotelephone with any land station, with the U. S. Coast Guard or with other nearby fishing vessels. Most ships have this equipment and are included

(*Continued on next page*)

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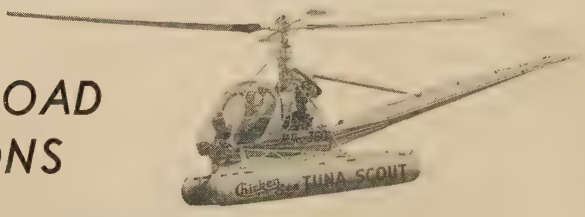

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in a special telephone book titled "List of Ships Equipped to Communicate with Coastal-Harbor Radiotelephone Stations."

A REPORT on the development of our commercial fishing industry would not be complete without the fact that until 1943 the annual catch at Eureka usually ran to about five million pounds yearly. This has grown each year until 1948 when the catch was 25,261,104 pounds. Sole accounted for more than one half the total with 13,964,356 pounds. Crab was second, rockfish third and salmon fourth.

Spawning and Development

(*Continued from page 13*)

miles offshore, often in mid-ocean. The oceanic skipjack, *K. pelamis*, a tropical tuna of cosmopolitan distribution, is particularly notable in this respect. Many examples referred by Ehrenbaum to this species were taken on both sides of the Atlantic, as well as at several stations in midocean. Two early juveniles which he referred to the oceanic skipjack were taken in the Arabian Sea about 350 miles westerly of the Laccadives. Early juveniles which Ehrenbaum identified as *Orcynus germo*, his conception of which includes, apparently, both the albacore (*Thunnus germo* Lacep.) and the Atlantic yellowfin (*Neothunnus albacora* Lowe) were also captured at mid-Atlantic stations, hundreds of miles from the nearest land.

In their totally pelagic life cycle the tunas are unlike many of our other important food fishes. Halibut and cod, for example, are pelagic as eggs and as larvae, but later are bound to the land as juveniles and adults. Herring, con-

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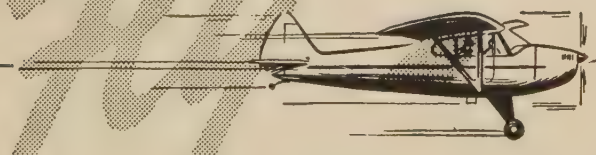

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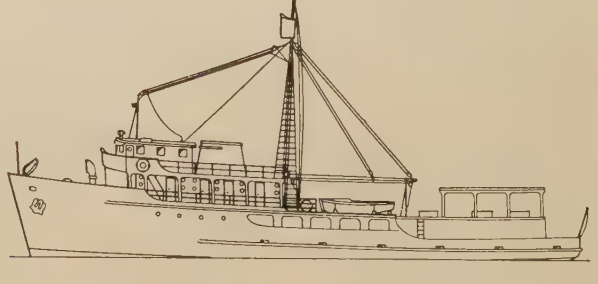

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versely, are pelagic as adults, although not going nearly so far to sea as the tunas, but they deposit their eggs on the sea bottom in inshore waters. The salmon roam the seas quite far from shore during their feeding migration, but as adults are drawn back to the fresh-water rivers to spawn.

It is well known that tunas are large, powerful, fast-swimming fishes, capable of migrating great distances on the high seas. The oceanic skipjack have long been well known to mariners on the high seas from their habit of chasing flying fishes gliding away before the ship's bow. Albacore, regarded by American consumers as the finest of the tunas, have been captured midway between Oregon and Honolulu (Brock, 1939). The Japanese commercial fishery for albacore extended far out to sea, almost 2,000 miles eastward from the home islands (Uda and Tokunaga, 1937).

There is, then, evidence that the tunas spawn in many parts of the Pacific Ocean; that at all stages of their lives, including eggs, larvae, and juveniles, they are completely pelagic; that at least two of the most important commercial varieties spawn in the open sea, often far from land, even in mid-ocean; that some species occur in commercially important numbers in mid-ocean. There is nothing in the known life cycle of these fishes that restricts their movements to the vicinity of any land mass. Whether there are ecological factors operating to keep the tunas in the neighborhoods where they are spawned

(*Continued on next page*)

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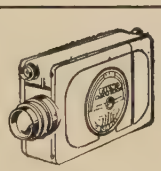

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Golden Gate

By ROBERT K. LAWSON

MARINERS aboard small craft who have endured the hardships and uncertainties of guiding their vessels through blinding darkness, fog and storms can face the future with lighter hearts. Radar, the modern electronic navigational aid that enables a skipper to see through these "blackouts" of Mother Nature, is now available in compact form to fit the space limitations of small vessels, such as tugs, harbor craft, trawlers, fishing craft, ferries and yachts. After more than two years of research, in answer to many demands, Radiomarine Corporation of America's engineers have designed a new small radar which has essential performance features equal to those previously available only in larger more expensive radars. The first installation has been made aboard a busy McAllister Brothers tug which operates in New York Harbor, Long Island Sound, Atlantic coastal waters, the Connecticut River and New England harbors.

The new model is known as "CR-103." It is a 3.2-centimeter design. It is the result of the same Radiomarine engineering and production know-how that produced more than 800 of Radiomarine's larger CR-101-A radars that are in use throughout the world on vessels of many types flying the flags of the principal maritime nations. Although small in size, the CR-103 has a *full power* 30 kw transmitter. It has the power and sensitivity to pick up ships or land at 20 miles as well as small buoys at close range. There are four range scales which are calibrated in statute or nautical miles. They are: 1, 3, 8 and 20 miles, with a close-in range of 75 yards from the antenna. Consisting of three basic units—the Indicator, the Transmitter-Receiver and the Antenna Assembly—the new radar is cleverly designed to meet a variety of installation situations encountered aboard small craft where space and power supply are at a premium.

The Indicator can be mounted three ways. Either from the overhead, on a shelf or table, or on top of the Transmitter-Receiver cabinet. It thus takes up very little room in a small wheelhouse. The entire Indicator is mounted on an aluminum bracket and may be tilted and locked at any angle for convenient viewing. The Transmitter-Receiver is a little gem to service. It opens like a book. By removing the front cover direct access is obtained to all components mounted on a hinged panel. By opening this panel, like the page of a book, easy access is obtained to parts mounted at the rear. The Receiver is a whole new design possessing high sensitivity, improved automatic frequency control, the latest types of tubes, all in a very compact unit.

THE 50-inch diameter slotted low wind resistance rugged antenna provides a sharp 1.9 degree horizontal beam for high resolution plus a broad 20 degree vertical beam for rough weather. The antenna drive gears are enclosed in a weathertight cast aluminum housing. Precision worm gearing runs in an oil bath. Ball bearings are used throughout. There are no tubes or similar electronic parts in the antenna. The antenna weighs only 150 pounds. One of the important features of the new radar which widens its application is the fact that ship's line voltage is no longer a problem. The equipment operates from 24, 32, 115, 230 volts DC, or 115/230 volts 60 cycles. The CR-103 will be sold domestically through Radiomarine's 23 branch offices nationally. Foreign sales and service will be handled by the RCA International Division. (Direct inquiries to Radiomarine Corporation of America, 75 Varick St., New York 13, N. Y.)

If there is one place on earth that has a colorful and romantic waterfront, it's San Francisco. This is especially true in the winter time, when, particularly in the early morning, the fog horns sound over the Bay; fishermen move about in the shady gloom, and the tall hulls of ships loom like ghosts in the murk.

is unknown. Whether they do, indeed, stay always in the same part of the sea where they were spawned, or whether some species at least go freely roaming over all that part of the ocean warm enough for them, is an unsolved but very important problem. If they do move only within restricted areas, so that each species is divided into several independent stocks, each inhabiting its own part of the sea, there is the further problem of determining the boundaries of each separate stock.

THESE are problems which must be solved for the economic welfare of the large, growing tuna industry. It is a fundamental principle in the management of any stock of fishes that a population must be treated as a unit. If we control the utilization of a given population within only a fraction of the area it inhabits, it may still be decimated by unrestricted exploitation in the remaining part of the area. Conversely, if a region is divided into several areas, each inhabited by a separate and distinct population, exploitation of one of these populations will have no effect on the others. The outstanding thing about the present American Pacific tuna fishery is the terrific growth of the fishing fleet operating in the waters off California, Mexico, and Central America, southward to the vicinity of the Galapagos Islands. From 1918 to 1940 the rate of expansion of the fishery was such that the catch doubled about every 8 years. A temporary setback was suffered during the war years, because of curtailment of fishing grounds and transfer of vessels to military purposes. Since the war's end the fleet has resumed a very rapid rate of growth. At the same time that the intensity of the fishing effort is increasing in this restricted area, there are other large sections of the Pacific, inhabited by the same species, which are not being fished at all.

Whether the fishing in the present fishing area bears on only a part of the population of each species, or on all of it, will ultimately determine how much it can expand in the present fashion. If the tuna stocks in the area of the present fishery are being constantly replaced by immigrants from elsewhere, the industry is actually exploiting a larger share of the total population of the sea than the limited area would indicate. If, however, such immigration is not taking place, the present fishery is using only a fraction of the tuna resources of the Pacific Ocean, and leaving a large share of them unutilized.

The practical management of the fishery depends, then, in the very first instance, on determining the geographical limits of the stocks involved. This is a familiar problem in fishery biology and the methods of solution are known. The application to Pacific tunas is formidable only in magnitude, not in method. The size of the problem cannot be minimized, however. The Pacific is a very big ocean, and the problems presented by the tuna populations inhabiting it are correspondingly large. Yet, they are problems which cannot be sidestepped if the commercial fishery is to attain its maximum development on a sustained yield basis.

The completely oceanic life histories of the tunas also raise some new problems in fishery regulation, or at least some new extensions of old ones. To a larger extent than any other group of species which is the object of a commercial fishery, with the possible exception of whales, the tunas constitute an international resource. They call no country home; they pass the greater part of their lives and reproduce their kind outside the territorial limits of any nation.

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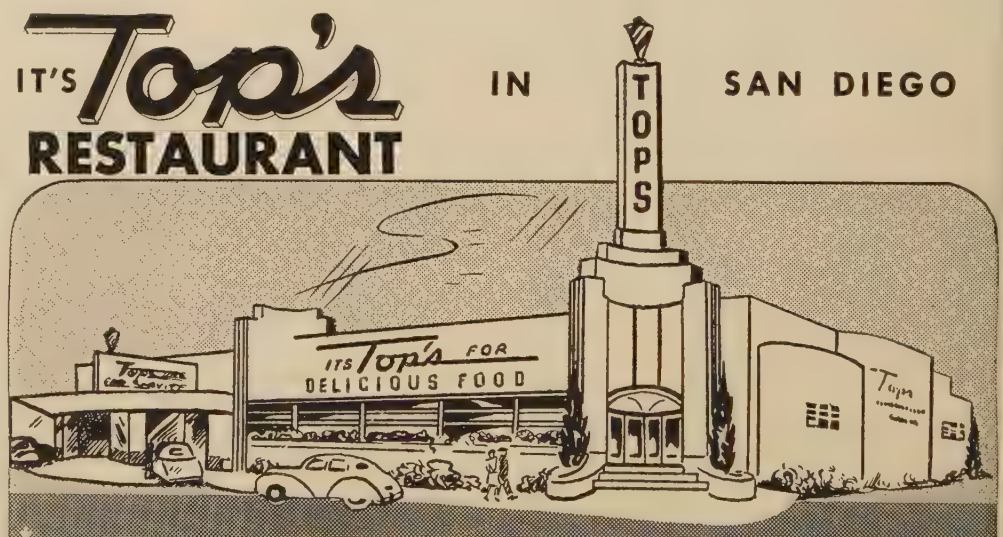

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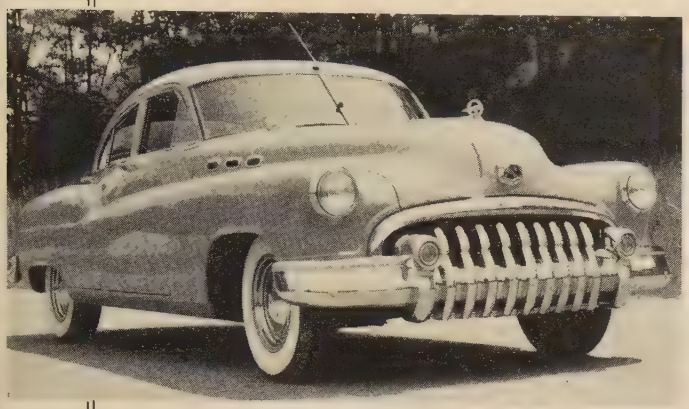

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Regards,

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San Diego Observer

By SEYMOUR FRANCIS

I'VE received a number of requests lately, relative to a couple of questions involving commercial fishing equipment. The first was on the subject of Columbian Nylon rope. The second, (and a most totally unrelated subject), concerned Jabsco pump's new clutch control feature. Here's the dope I got from both companies: Nylon, when made into rope, retains all the inherent advantages of duPont Nylon, and Columbian Nylon Rope has the added value of *stabilization*—an exclusive Columbian process. *Stabilization* makes a Nylon rope that is easier to handle, easier to splice, firm, yet flexible. The strands are actually made to conform to the lay of the rope. There is a minimum of untwisting, fluffing and fraying when a length of Columbian *Stabilized* Nylon rope is cut. It is also easier to knot and splice. Columbian Nylon rope is fast becoming more popular with fishermen everywhere. Long life; resistance to abrasion—water absorption—marine rot or decay; make it adaptable for use as part of the fishing equipment or as lines aboard ship. For hawsers and other lines, it is unsurpassed. Nylon lines are easy to handle, absorb little moisture, and can be stowed without drying. Recent experiments conducted by Columbian show that nylon for use in fishing nets really pays off in long life, ease of handling and durability. For cod-end use, nylon can really take it. It will outwear Manila, Sisal or Cotton cod-ends by many, many trips. Columbian Nylon Heading Twine is another Columbian Nylon product superior in texture and performance. It withstands the ravages of salt water, marine organisms, and shows great resistance to the attack of lobsters, etc. It does not tighten up and pull staples or break.

Columbian's complete line of Nylon Fishing Cordage is available in two constructions. Both are made from the same pure virgin nylon. 1. Columbian Filament Nylon, made from long continuous filaments of original, white, silky nylon is tops for appearance, texture, and strength. 2. Columbian Spun Nylon, the newest development in Columbian Nylon cordage, is not quite as luxurious in texture or appearance which is traceable to the short staple lengths from which it is made. Columbian Spun Nylon, though not as attractive as the luxurious Filament Nylon, nevertheless is less slippery when wet and holds knots and splices more securely. 85% as strong as Filament Nylon, this far exceeds the strength in other vegetable fibre cordage. More complete information on any particular Nylon fishing rope may be had from the Columbian Rope Company, Auburn, New York.

•

A NEW throw-out clutch designed to simplify the installation and driving hook-up of Jabsco marine and industrial pumps is announced by the Jabsco Pump Company. Developed to be used with Jabsco's ball bearing rubber impeller pumps, this simple, compact clutch mechanism will allow the pump to be engaged or disengaged at the throw of a small control handle. Action of the clutch is emphasized as smooth and positive, using a ball lock, v-belt mechanism which is attached to and supported by the pump shaft. The control linkage mounts on the housing of the Jabsco pump, requiring only a single bolt fastening. When you throw the clutch control handle into "in" position, the ball lock action engage the v-belt and quickly applies power to the pump drive shaft. In "out" position, the belt slackens and idles on the outer race of a ball bearing. The manufacturer points to this simplicity of mechanism as an important factor in eliminating clutch servicing problems. Since the clutch attaches directly to the pump shaft, there's no need for an additional shaft or outboard bearing. Likewise, mounting as it does on the pump housing, the control linkage may be mounted at any point on a full 360° periphery. This elimination of separate base plate, shaft, and outboard bearing contributes to the compactness and lightness of the clutch attachment.

Mackerel Tagging

(*Continued from page 14*)

ed to decrease as distance from the fishing grounds increased, with Southern California-tagged fish making the greatest contribution over the period of years.

The fish tagged in Southern California in 1941-42 simply disappeared and over-all returns after the season of release were on the level of those from Sebastian Viscaino Bay fish released that season. As discussed previously, recoveries in Central California were also low and a southward movement can be postulated. A high tagging mortality cannot account for the difference in view of the numerous season zero returns. The aggregate recovery rate for Southern California releases was of course lowered appreciably by this disappearance.

The figures presented thus far have made no allowance for tagging mortality. If we adjust the number of releases to include the minimum (23 percent) and the average (40 percent) rates of tagging mortality before deducting season zero returns, a better picture is had of the actual recovery rates. The minimum gives perhaps the best available estimate of the actual number of effectively tagged fish.

Soledad and Southern California showed the lowest survival rates (26 and 27 percent), the other regions ranging from 41 to 48 percent. The figures must not be regarded as "true" survival rates, but rather as mirroring the effect of a gradual influx from the outlying regions, and it is suspected, an appreciable departure from the grounds

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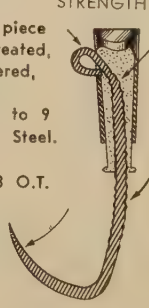
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on the part of the Southern California fish.

The season-to-season data indicate that Southern California and Soledad fish were dominant in season one and that returns tended to equalize in season two. Thereafter, returns, though few in number, were of the same magnitude regardless of the region of release. Disregarding the season of release, returns dropped off uniformly from year to year except for Soledad Bay, where the number tagged was small, and Thurloe-San Roque Bays, the southernmost tagging region.

The overall picture is altered slightly if we take into account a minimum tagging mortality of 23 percent and then express returns each season as a percentage of the maximum survivors at the season's start.

Returns from the three northern regions were dominant through season three and it was only in the fourth season that the scanty returns from each region approached the same magnitude.

Summarizing, each region contributed about the same amount to the fishery after a lapse of several years, but the total contribution of the distant regions was far less over the entire period.

In making these comparisons, it must not be overlooked that the fish tagged in Southern California not only reappeared in quantity but provided as well the basis of the fishery in the season of tagging. Weighted returns in season zero generally exceeded 20 percent if the fish were exposed to more than a month or two of the initial season, and over 40 percent of the fish marked at Santa Catalina Island during the winter of 1940-41 were recaptured by the end of March, 1941.

It is unfortunate that tagging operations had to be carried on in the distant regions almost exclusively during the heaviest part of the Southern California fishing season. As a result, we know nothing of the role played by the population to be found there during the spring and summer. That many of the fish found as far distant as San Roque while the Southern California fishery was still in progress did appear in later years on the fishing grounds is indicative of the importance of Mexican waters to the California industry. That Monterey fish appeared in Southern California in the season of release and made a heavy contribution over a period of years shows that individuals found in northern waters move freely into Southern California.

WITHOUT facilities for tag recovery in Mexico, no proof of cyclic movement is possible. That the populations in the regions covered by the program intermingle has been demonstrated and some measure of the relative importance of these areas has been obtained. The paucity of returns from the Thurloe-San Roque area make it seem likely that the adult population present during the winter months still farther south contributes a negligible quantity to the Southern California fishery. The tagging program did not, however, answer the question as to what becomes of Southern California fish during the months when they are no longer present in fishable numbers on these grounds. The lack of any abundance of mackerel to the north at this time leaves a southern migration the only tenable explanation, but no clue as to how far south the fish move can be obtained without tagging in Mexican waters during the spring.

Two avenues of approach were followed in attempts to obtain a valid measure of abundance from tag returns. Several sources of error, some apparent from the start and others found in the course of analysis, proved sufficient to cloud the results and forced the conclusion that, insofar as the mackerel fishery is concerned, returns from the tagging experiments could not alone be used for population estimates.

(*Continued on next page*)

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The initial study followed generally the method set forth by Ricker (1944) and applied by Clark and Janssen (1945) to returns from sardine tagging experiments. A subsequent elaboration by Ricker (1948) designed to overcome some of the difficulties encountered in applying the earlier technique permitted a second analysis including these later concepts.

Both methods presume a uniform distribution of tagged fish in the population, and reasonably constant fishing effort, fishing mortality, and natural mortality throughout the time period under survey. Further, there must be a measure of tag loss due to death as a result of tagging, shedding of tags, and incomplete recovery. Given these circumstances and measures, estimates of mortality from natural causes and from fishing, and of the absolute size of the exploited population are theoretically obtainable from tag returns over a series of equal time intervals.

The discussion in preceding sections has indicated that the basic premises are at best only partially fulfilled in this instance. The mackerel fishery is concentrated in a small part of the year, reaching its peak in October and November. By adopting the fishing season as the time interval, the midpoint coincides reasonably well with maximum fishing intensity, and the error caused by unequal distribution of fishing and natural mortality is believed minimized.

Complete dispersion of tagged fish in the population had perforce to be assumed. The data presented in the discussion of migrations demonstrated that this condition did not prevail, at least for the first year or two after release. Further, tagging was not evenly distributed throughout a given season either as to time or in relation to the incidence of fishing but was accomplished as circumstances permitted. The Southern California tag lots were exposed to initial seasons of varying lengths, were released in areas subject to varying degrees of fishing intensity, and could not be presumed to be equally available to the fisherman. Returns in the season of tagging consequently were not comparable with returns in later seasons and could not be directly utilized.

No measure of fishing intensity was calculated. The disruption of the fishery during the war years would have made its determination extremely difficult, and of such doubtful accuracy that it was decided the results would not be worth the required expenditure of time and manpower.

The validity of the correction factors for tagging mortality and for tag loss have been assessed. The measure of tagging mortality is especially open to question. Both the minimum rate of approximately 23 percent and the average of 40 percent were applied in estimating the number of survivors.

In the initial study the total effect of fishing mortality and natural mortality, or the rate of decline (a), was measured by fitting a straight line to the logarithms of recoveries in each time interval and determining the value of the regression coefficient. The antilogarithm of this value, representing the average survival rate, was then subtracted from 1.00 to convert it into the rate of decline.

Given the rate of decline, an estimate of annual fishing mortality independent of annual natural mortality was calculated by determining the number of tags which would have been recovered at zero time, when only fishing mortality would be operative, and expressing this figure as a percentage of the number of tagged fish then available.

Since returns in season zero could not be used, the value of "a" was determined from returns in the following seasons, and zero time represented the beginning of season one. A great potential error revolved around the determination of the number of tagged fish available at zero time—the total tagged

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less those dying as a result of tagging, those shedding their tags and those captured or dying of natural causes prior to the start of season one. A suitable correction existed only for those captured, it being the weighted returns in season zero. Natural mortality was unmeasurable, and, since this loss of tags could not be deducted from the number of available tags, the value obtained for fishing mortality was lowered by an unknown but probably significant amount. The rate of exploitation as derived from this method is, consequently, a minimal estimate.

BOTH methods were applied to magnet returns at Los Angeles Harbor from the tag lots released in Southern California, to returns from all releases in a given season, and to recoveries from various groupings of tagging seasons. Final studies centered on releases in the 1940-41, 1941-42 and 1942-43 seasons, eliminating the two early lots as they represented but two fishing areas over a period of three seasons. Lots released in Central and Lower California were not handled separately for a number of reasons. It was felt that the latter could not be utilized directly because of the gradual entry of the fish into the fishery, a factor which would result in an artificially reduced rate of decline. The small number of releases in Monterey Bay made use of these lots seem unwarranted, particularly as the 1937 group entered the fishery slowly and the 1939 fish disappeared after the second season. Lots from these regions were used in combination with Southern California material.

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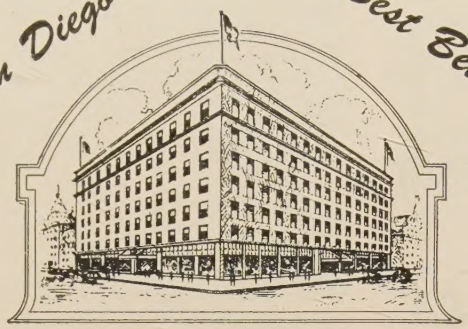

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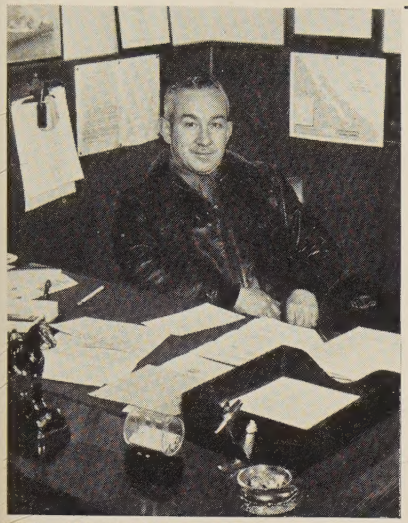

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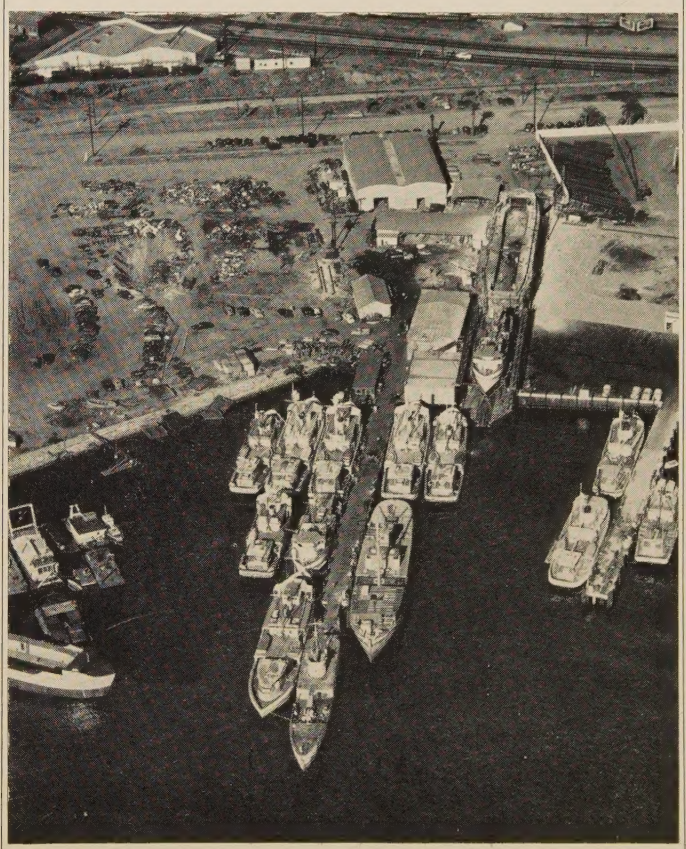

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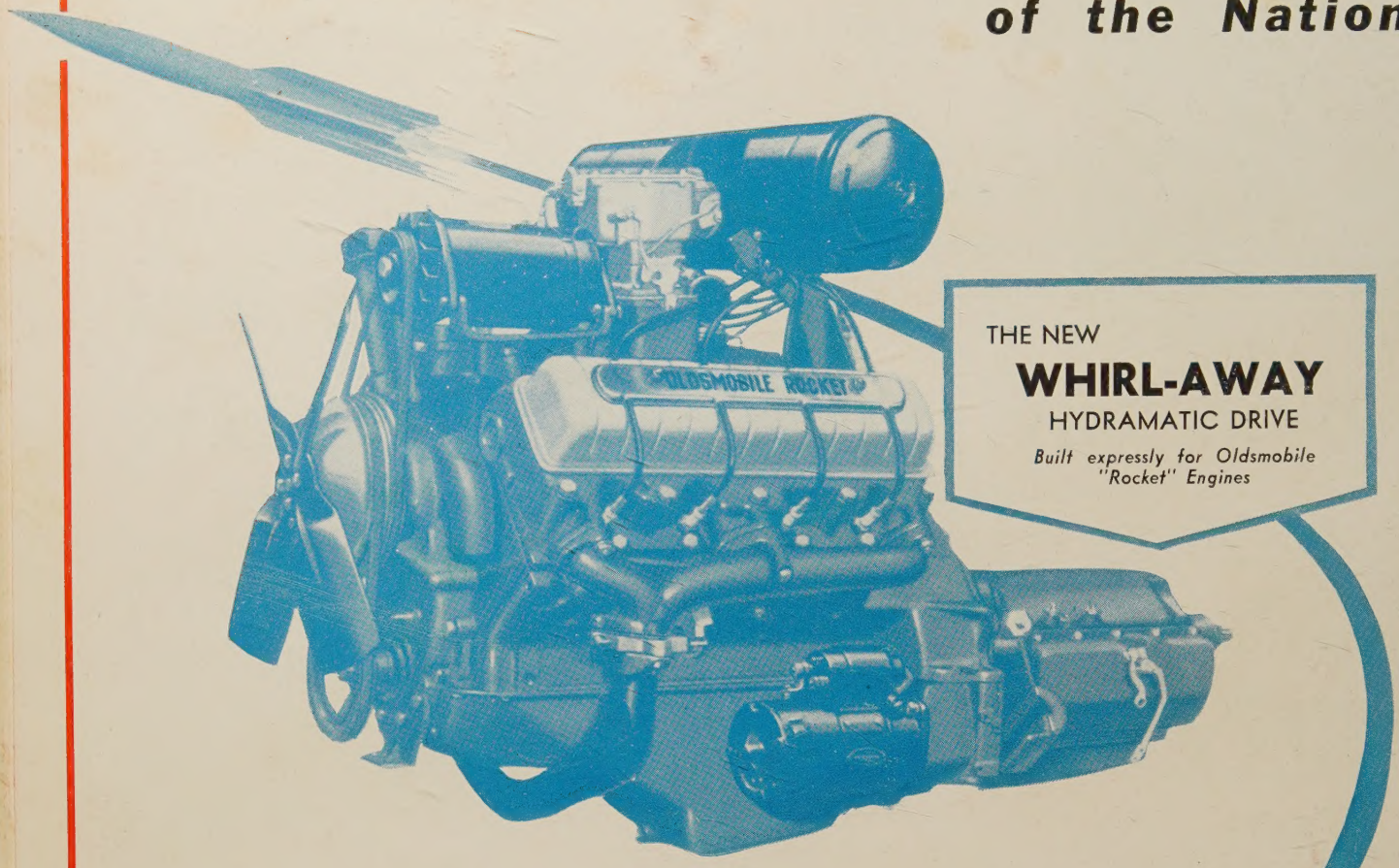

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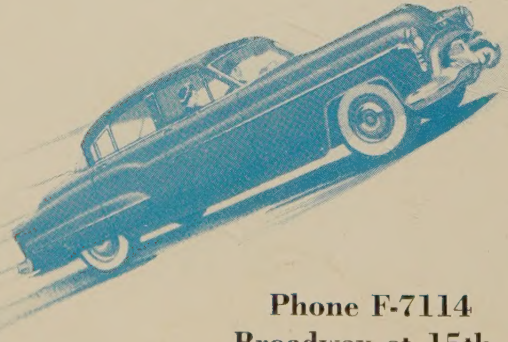

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